COMPREHENSIVE STORMWATER MASTER PLAN

Town of Herndon, Virginia

Adopted June 13, 2000

CPA #00-1

TOWN OF HERNDON
COMPREHENSIVE STORMWATER MASTER PLAN

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INTRODUCTION

The Town of Herndon is confronted with increasingly more complex stormwater management requirements and needs in order to comply with State and federal regulations and to protect the Town's streams and other natural resources from the impacts of urban development and land use activities. The purpose of this Comprehensive Stormwater Master Plan is to help make sense of the multitude of State and federal stormwater management mandates and regulations encumbered upon the Town and to provide the Town with a decision-making tool to implement a comprehensive stormwater management program. The plan identifies existing and possible future federal and State regulations and mandates relating to stormwater quality and quantity management that require, or will require, positive action by the Town of Herndon. In addition, the plan investigates programs that, while optional, the Town may wish to adopt in order to further locally identified environmental goals. Finally, the plan investigates the various funding opportunities for the Town as it proceeds with plan implementation. The Comprehensive Stormwater Master Plan is organized into eleven parts:

Introduction
Summary of Stormwater Action Priorities
Glossary and Acronyms

I. Herndon's Stormwater Management Ordinances and Programs
II. Existing and Potential Stormwater Management Mandates
III. Optional Stormwater Management Programs
IV. Stormwater Management Funding Opportunities
V. Recommendations for Action

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EXECUTIVE SUMMARY AND ACTION PRIORITIES

The primary goal of this Plan is to identify actions necessary to bring the Town into compliance with existing and future State and federal stormwater management mandates and to identify additional measures necessary to protect water quality and habitat in the Town's streams. This was accomplished by conducting an assessment of existing Town programs and ordinances, existing and future stormwater mandates, and voluntary opportunities for stormwater management.

While there are many factors driving changes to the Town's existing stormwater management programs, most are related to four core areas including:

- Changes to Town programs necessitated by upcoming federal Clean Water Act NPDES Phase II permit requirements;
- Changes to Town ordinances and programs resulting from existing and future Chesapeake Bay Preservation Act requirements;
- Updates to the Town's Pro Rata Share Program; and,
- Voluntary adoption of a Stormwater Management Ordinance.

In addition to these core areas, other actions identified for consideration by the Town to enhance its stormwater planning and management capabilities include:

- Identifying additional wetlands resources in the Town for planning purposes;
- Submitting changes to floodplains to the Federal Emergency Management Agency and requesting re-mapping of Town floodplains; and,
- Investigating additional funding sources for stormwater management, including Fairfax County's consideration of a Stormwater Utility Fee.

The following table is a summary and prioritization of recommendations (actions resulting from a mandate) and suggestions (optional actions) presented in this document. Priorities are based on need for complying with State and federal mandates, timing with other program elements, benefit to Herndon's environment, and cost-benefit to the Town. Priority nomenclature includes:

Now: There is an immediate need or desire for action.
Near Term (FY01): Action is needed or desirable within Fiscal Year 2001.

Near Term (FY02): Action is needed or desirable within Fiscal Year 2002.
Mid Term: Immediate action not required, action needed or desirable within 3 to 5 year time period.
Long Term: Immediate action not required, action can be carried out over long term (greater than 5 years).

Each action item includes a page reference where the reader can obtain background information and analysis of the issue.

ACTION	PRIORITY	WHY A PRIORITY/ EXPLANATION	MANDATE OR OPTION
STORMWATER MANAGEMENT ORDINANCE			
Adopt Stormwater Management Ordinance (p. III.1, V.6)	**NOW**	Funding available to the NVRC through grant from Virginia Coastal Program which expires 9/30/00. Comprehensive Plan recommendation.	Option. Serves to streamline many Town ordinances under one umbrella.
PRO RATA SHARE PROGRAM			
Update Pro Rata Share program – project identification. (p. I.7, IV.1, V.7)	**NEAR TERM (01) (1-6 months)**	Projects for the Town's Pro Rata Share program have not been updated for several years. Northern Virginia Regional Commission performed baseline mapping work in FY 2000. Comprehensive Plan recommendation.	Option. Needs to be updated to maintain as a credible funding source.
Update Pro Rata Share program – projection of engineering costs. (p. I.7, IV.1, V.7)	**NEAR TERM (01) (6-12 months)**	Same as above. Need to develop costs associated with implementation projects in order to adjust Pro Rata Share fee.	Option. Needs to be updated to maintain as a credible funding source.
Update Pro Rata Share program – cost structure update, make ordinance more flexible to handle increased assessments of need. (p. I.7, IV.1, V.7)	**NEAR TERM (02)**	Same as above. Cost structure needs to be updated based on identified engineering costs and analysis of watershed imperviousness at build-out.	Option. Needs to be updated to maintain as a credible funding source.

CHESAPEAKE BAY PRESERVATION ORDINANCE			
Incorporate a policy requiring private BMP owners provide annual inspection to the Town. (II.4, V.5)	**NEAR TERM (01)**	Future compliance issue. Failure to implement may result in future maintenance cost burdens to the Town.	Strategy optional. Action mandatory.
Eliminate RMA opt-out provisions of the CBPO. (III.3, V.4)	**NEAR TERM (01)**	Comprehensive Plan recommendation. Relatively simple amendment – requires outreach to development community. Coordinate with other amendments to the CBPO and upcoming changes to the Chesapeake Bay Act Regulations (expected within a year). Funding may be available from CBLAD.	Option.
Allow for fee-in-lieu of on-site BMPs under certain scenarios. (IV.3, V.4)	**NEAR TERM (01)**	Same as above.	Option.
Incorporate civil penalties into Chesapeake Bay Preservation Ordinance. (III.3, V.4)	**NEAR TERM (01)**	Same as above.	Option.
Implement a system for tracking variances and waivers of Chesapeake Bay Ordinance. (II.4, V.4)	**MID TERM**	Future compliance issue. Dependent on ability of CBLAD to move on the issue.	Strategy optional. Action mandatory.
Submit Subdivision and Zoning Ordinances to CBLAD for review. (II.4, V.4)	**MID TERM**	Future compliance issue. Dependent on ability of CBLAD to move on the issue.	Mandate.

FEDERAL CLEAN WATER ACT REQUIREMENTS (NPDES PHASE II)			
Incorporate sanitary sewer lines and minor storm sewer lines/outfalls into Town GIS. (II.5, V.2)	**NEAR TERM (01)**	Need as base for NPDES compliance. Major storm sewer lines and outfalls already digitized per contract with NVPDC. Permit application due 2003. Compliance by 2008.	Mandate.

Implement a Town-sponsored used oil, filters, and antifreeze recycling program. (II.5, V.2)	**NEAR TERM (01)**	Recommended for compliance with NPDES in recognition of decreasing private sector participation. The Town should watch for potential legislation at the 2001 General Assembly, which may make funding available for local governments to a recycling infrastructure.	Strategy optional.
Implement dry weather storm sewer outfall monitoring program. (II.5, V.2)	**NEAR TERM (02)**	Required for compliance with NPDES. Implementation to occur no later than 2008, but early implementation will help Town identify pollution hot-spots.	Mandate.
Implement a public education program on dog waste disposal regulations. (II.5, V.2)	**NEAR TERM (02)**	Recommended for compliance with NPDES. Implementation to occur no later than 2008, but early implementation desirable.	Strategy optional. Action mandatory.
Implement a storm drain stenciling/ labeling program and a related public education program. (II.5, V.2)	**NEAR TERM (02)**	Recommended for compliance with NPDES. Implementation to occur no later than 2008, but early implementation desirable.	Strategy optional.
Implement a point of purchase placard program for oil and antifreeze recycling. (II.5, V.2)	**NEAR TERM (02)**	Recommended for compliance with NPDES. Town should watch for potential legislation at the 2001 General Assembly, which may result in State-wide program.	Strategy optional.
Implement annual or semi-annual household hazardous materials drop-off collection day in coordination with Fairfax County. (II.5, V.5)	**NEAR TERM (02)**	Recommended for compliance with NPDES. Implementation to occur no later than 2008, but early implementation desirable. Comprehensive Plan recommendation. May be cost-prohibitive if service provided full-time or independent from County.	Strategy optional.

OTHER PROJECTS/PROGRAMS			
Strongly encourage alternative BMPs acceptable to meet Chesapeake Bay Preservation Ordinance pollutant removal calculations.	**NOW**	To promote the use of other on-site stormwater management facilities within the Town other than traditional dry ponds.	Option.

Field survey of wetlands. (II.1, V.1)	**NEAR TERM (01)**	Comprehensive Plan recommendation. Relatively simple implementation.	Option.
Submit Letters of Map Revision (LOMRs) to Federal Emergency Management Agency for re-mapping consideration. (II.2, V.6)	**MID TERM**	Major changes in drainage patterns since 1979. While site-specific changes in floodways have been mapped, there is no recent information on how changes have affected floodways in other parts of the Town.	Option.
Expand base of BMPs acceptable to meet CBPO pollutant removal calculation requirements.	**MID TERM**	Allowable BMPs are largely governed by Fairfax County Public Facilities Manual. While innovative BMPs are permitted, several hurdles often result in the use of traditional dry pond BMPs. The Town will consider (1) developing its own design criteria for innovative BMPs, such as bioretention, or (2) working with the NVRC to incorporate alternative BMPs into the regional Northern Virginia BMP Handbook.	Option.
Investigate the future implementation of a Stormwater Utility Fee. (IV.1, V.8)	**LONG TERM**	Fairfax County is considering implementation of a Stormwater Utility Fee to provide a continuous funding source for stormwater infrastructure and maintenance. Herndon may also wish to consider the use of a SUF. One option under consideration by Fairfax County is to add a SUF to individual property tax bills. The Town needs to participate in the Fairfax process to ensure that if funds are collected from Town residents, which they are allocated for Town use.	Option.

GLOSSARY AND ACRONYMS

The following is a list of terms and acronyms used in this Plan. The list is meant to serve as a reference for readers and in no way should be construed as a legal document for the purpose of regulation or permitting.

- **303(d) List:** Refers to Section 303(d) of the federal Clean Water Act which requires each state to submit a list of water quality "impaired" streams, stream segments, or other water bodies to the U.S. Environmental Protection Agency on a bi-yearly basis. States are required to develop a TMDL (Total Maximum Daily Load) for each 303(d) stream or stream segment.
- **404 Wetland Delineation Criteria:** Refers to Section 404 of the federal Clean Water Act which authorizes the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency to protect wetlands. The actual delineation methodology is provided in the Corps "Wetlands Delineation Manual" (1987 version).
- **BMP/Best Management Practice:** A general term used to describe the most effective and practicable means of preventing or reducing pollution generated by nonpoint sources. The term is commonly used to refer to a structural stormwater management facility (such as wet and dry ponds, infiltration trenches, and sand filters) that is used to meet various water quality management requirements, but can also refer to nonstructural practices such as street sweeping and vegetative buffers.
- **Chesapeake Bay Agreement:** Agreement signed by Virginia, Maryland, Pennsylvania, the District of Columbia, the U.S. Environmental Protection Agency, and the Chesapeake Bay Commission (originally in 1983) establishing the Chesapeake Bay Program. Subsequent directives and amendments have been used to set new Chesapeake Bay Program policies and initiatives. The Virginia Chesapeake Bay Preservation Act was one outgrowth of Virginia's voluntary commitments under the Agreement.
- **CBLAB/Chesapeake Bay Local Assistance Board:** A Board created under the Virginia Chesapeake Bay Preservation Act to develop regulations, review local government ordinances and programs, and provide guidance to local governments on implementation of the Act.
- **CBLAD/Chesapeake Bay Local Assistance Department:** The Virginia agency formed to support CBLAB and to provide assistance to local governments on Chesapeake Bay Preservation Act implementation.

- **CBPA/Chesapeake Bay Preservation Area:** Area protected under a Chesapeake Bay Preservation Ordinance. A CBPA must include Resource Protection Areas and Resource Management Areas. A CBPA may also include, and in Herndon does include, Intensely Developed Areas.
- **CBPO/Chesapeake Bay Preservation Ordinance:** The ordinance adopted by a locality to meet the requirements of the Chesapeake Bay Preservation Act.
- **Chesapeake Bay Preservation Area Designation and Management Regulations:** The regulations stemming from the Chesapeake Bay Preservation Act which are promulgated by the Chesapeake Bay Local Assistance Board. The regulations are implemented in three phases: (1) mapping and ordinance adoption; (2) comprehensive planning; and (3) enforcement and voluntary audits.
- **Chesapeake Bay Program:** The program established under the U.S. Environmental Protection Agency to administer the interstate Chesapeake Bay Agreement. The program's main office is located in Annapolis, Maryland.
- **CRS/Community Rating System:** A program that provides flood insurance premium reductions for communities that exceed FEMA's minimum flood management criteria.
- **CWA/Clean Water Act:** The term commonly used to refer to the 1972 amendments to the Federal Water Pollution Control Act and subsequent amendments and reauthorizations to this Act. The Clean Water Act deals with a wide breadth of water issues including control of water pollution and protection of wetlands.
- **DCR/Department of Conservation and Recreation:** The lead Virginia agency on stormwater management and nonpoint source pollution issues.
- **DEQ/Department of Environmental Quality:** The lead Virginia regulatory agency for implementation of federal Clean Water Act provisions and the lead agency on point source pollution issues and wetland regulations.
- **E&S Ordinance/Erosion and Sediment Control Ordinance:** Local ordinance to implement the Virginia Erosion and Sediment Control Regulations and to define the methods used to regulate land-disturbing activities in order to minimize erosion.
- **Daylighting:** The process of returning a stream enclosed in a drainage pipe or culvert to a more natural, open condition.
- **Dry Weather Outfall Monitoring:** Refers to testing of water flowing from stormwater conveyance system outfalls during dry weather. The purpose is to detect illegal discharges to the stormwater system apart from pollutants that are flushed from impervious surfaces during a storm event. Dry weather monitoring is a required element of an NPDES Phase II permit.
- **FEMA/Federal Emergency Management Agency:** The federal agency responsible for oversight of local flood control ordinances and for mapping floodplains for insurance purposes.
- **FIRM/Flood Insurance Rate Map:** The official map developed by FEMA that designates local floodplains, associated flood risks, and the insurance rates associated with various risk zones. Boundaries of floodplains can be changed through a detailed on-site survey. Documented changed are submitted to FEMA in a Letter of Map Revision (LOMR).

- **Floodplain:** Lands that are periodically inundated by flood water. The "100-year floodplain" is the area that would be inundated by a storm expected to occur at an average of once in 100 years, although a 100-year storm may occur in any given year.
- **FPOD/Flood Plain Overlay District:** The district established under the Town's Zoning Ordinance that regulates building and development in the floodplain.
- **GIS/Geographic Information System:** Refers to a computer-based mapping system. A GIS contains layers of information that can be overlain with each other to perform analysis. Specific features may also have "attributes" or data associated with them to aid in analysis or mapping.
- **GPS/Global Positioning System:** Equipment that uses earth orbiting satellites to determine an exact longitudinal and latitudinal position. This information is often used in conjunction with a GIS for mapping purposes.
- **HHM/Household Hazardous Materials:** Household materials such a flammable liquids, pesticides, cleaning agents, etc. that are not appropriate for disposal through regular household garbage.
- **IDA/Intensely Developed Area:** A designation of a Chesapeake Bay Preservation Ordinance which recognizes that many of the ordinance's performance criteria are not applicable in heavily urbanized environments.
- **I&I/Inflow and Infiltration:** Refers to the problem of groundwater or surface water seeping or otherwise being misrouted to the sanitary sewer system. The excess water during rain events can overwhelm the sanitary sewer system and result in the discharge of only partially treated sewage.
- **Impervious Surface/Cover:** Surface composed of any material that significantly impedes or prevents natural infiltration of water into the soil. Impervious surfaces may include (but are not limited to) roofs, buildings, streets, parking areas, concrete, asphalt, and compacted gravel.
- **LOMR/Letter of Map Revision:** Official request to FEMA from a locality to modify a segment of a FEMA floodplain map or Flood Insurance Rate Map. LOMRs require significant detail and analysis to complete.
- **MS4/Municipal Separate Storm Sewer System:** Refers to a locality's storm sewer system including culverts, underground storm water pipes, and storm water outfalls to local streams. Under the Clean Water Act, localities must obtain an NPDES permit for their MS4.
- **NWP/Nation-Wide Permit:** A permit system established by the U.S. Army Corps of Engineers that provides a streamlined framework for allowing certain activities in wetlands and other waters of the United States.
- **NPS/Nonpoint Source Pollution:** Pollution that emanates from diffuse sources, such as runoff from agriculture and urban land development and uses.
- **Non-Tidal Wetlands:** Wetlands not affected by tides.
- **Northern Virginia BMP Handbook:** Handbook developed by the Northern Virginia Regional Commission and the Engineers and Surveyors Institute that outlines regionally

accepted standards for the implementation of BMPs to meet the Chesapeake Bay Preservation Act.

- **NPDES/National Pollutant Discharge Elimination System:** A permitting system established under the Clean Water Act that requires localities to reduce pollution from a storm sewer system to the maximum extent practicable. The permit requires a combination of monitoring, pollution prevention, and regulation. Federal implementation of NPDES includes Phase I (localities over 100,000) and Phase II (urban localities under 100,000).
- **NVRC/Northern Virginia Regional Commission:** Regional coordinating body representing 13 Northern Virginia localities, including Herndon. Virginia is divided into 21 regions, generally known as "Planning Districts." NVRC was called the Northern Virginia Planning District Commission until June, 2000.
- **NVSWCD/Northern Virginia Soil and Water Conservation District:** A political subdivision that works closely with the Chesapeake Bay Local Assistance Department and the Department of Conservation and Recreation to reduce nonpoint source pollution and conserve soil and water resources. The NVSWCD includes Fairfax County and its towns.
- **Point Source Pollution:** Pollution discharged from a clearly identifiable discrete source such as a factory or a sewage treatment plant.
- **Pro Rata Share:** Refers to a program that requires land developers to pay for their proportionate cost of managing stormwater in a particular watershed.
- **PFM/Public Facilities Manual:** A manual that provides specifications for the construction of public facilities and facilities that will be turned over for public maintenance. The Fairfax County Public Facilities Manual provides specifications for stormwater management facilities and BMPs.
- **Redevelopment:** Development within an existing impervious or disturbed area that is or has been previously developed.
- **RMA/Resource Management Area:** Refers to an element of a Chesapeake Bay Preservation Area. RMAs consist of lands on which improper use or development could cause significant water quality degradation. In Herndon, RMAs include all parts of the Town not specifically classified as Resource Protection Areas.
- **RPA/Resource Protection Area:** Refers to an element of a Chesapeake Bay Preservation Area. RPAs consist of lands that have an intrinsic water quality value due to the ecological and biological processes they perform, or that are sensitive to impacts which may result in significant degradation to the quality of state waters. In the Town of Herndon, this includes tributary streams, contiguous wetlands, and a one hundred-foot buffer around each of these features.
- **Source Control Fund:** A fund that can be created under a Chesapeake Bay Preservation Ordinance which developers may pay into in lieu of building on-site BMPs. The monies are to be used for water quality improvements and public education.
- **Storm Drain Stenciling/Labeling:** The process of stenciling or labeling a message on the face or top of a storm drain inlet. The message typically asks the public not to dump waste down an inlet because it drains to a local stream and the Chesapeake Bay. Stenciling

involves painting (usually with spray paint) a message; labeling is an alternative that involves gluing a prefabricated message onto the inlet.

- **Stormwater Detention:** Refers to any man-made structure that holds rainwater and then slowly releases it. Detention is used to reduce the velocity of water entering a natural stream system and to spread the volume out over a longer period of time. The purpose is to prevent erosion of stream banks and bottoms.
- **Stormwater Utility:** A user fee administered like a tax or service charge on all land owners that contribute runoff impacts. The monies collected from such a fee provide ongoing revenue to pay for stormwater management.
- **SWMO/Stormwater Management Ordinance:** An ordinance that may be adopted at local option under the Virginia Stormwater Management Regulations for the purpose of controlling stormwater volumes and velocities from developed land. The SWMO may also be used as an umbrella ordinance for Chesapeake Bay Preservation Act implementation and flood control requirements.
- **Tidal Wetlands:** Vegetated and non-vegetated wetlands influenced by tides. These are defined for legal purposes in 62.1-13.2 of the Code of Virginia.
- **TMDL/Total Maximum Daily Load:** A provision of the federal Clean Water Act that requires a TMDL to be developed for all "impaired" streams or water bodies. The acronym is taken from a maximum amount of a specific pollutant that can enter a system without violating surface water quality standards.
- **Tributary Stream:** Conceptually, any stream flowing into a water body to which it is a tributary. For example, Sugarland Run is a tributary to the Potomac, which is a tributary to the Chesapeake Bay. Under the Chesapeake Bay Preservation Area Designation and Management Regulations, a tributary stream is defined as any perennial stream appearing on the most recent USGS quadrangle map.
- **USACE/United States Army Corps of Engineers:** The federal agency that is responsible for administering federal wetlands regulations.
- **USEPA/United States Environmental Protection Agency:** The federal agency that is responsible for administering NPDES and TMDL requirements. In Virginia, oversight authority is provided to the Department of Environmental Quality.
- **USGS/United States Geological Survey:** The federal agency responsible for mapping and other land surveys. In Herndon, the USGS is responsible for producing the USGS quadrangle maps from which tributary streams under the Chesapeake Bay Preservation Ordinance are defined.
- **USGS Quadrangle Map:** Maps developed by the U.S. Geological Survey that show topography, streams and other water bodies, roads, and other features which cover 7 minutes of a degree of latitude and longitude. Also called "quad maps," the USGS produces them across the entire United States.
- **VPDES/Virginia Pollution Discharge Elimination System:** Virginia's equivalent of the National Pollution Discharge Elimination System that is run under the auspices of the U.S. EPA. Originally established in the 1970s to set limits on point sources of pollution, the program was expanded to cover pollution from MS4 systems in the 1990s.

- **VWPP/Virginia Water Protection Permit:** Refers to the permit required for any activity affecting State waters in Virginia such as streams and wetlands. The program is run by the Department of Environmental Quality. Some permits are run under the auspices of the U.S. Environmental Protection Agency.
- **WQIA/Water Quality Impact Assessment:** The study required under the Chesapeake Bay Preservation Ordinance any time that land-disturbing activity is proposed in a Resource Protection Area.
- **WQIF/Water Quality Improvement Fund:** A State fund established under the Virginia Water Quality Improvement Act of 1997 to support voluntary pollutant reduction efforts as outlined in Virginia's Tributary Strategies.
- **Wetlands:** Refers to areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
- **Zoning Ordinance:** The part of a locality's Code dealing with permitted land uses and building and development.

PART I
TOWN STORMWATER MANAGEMENT ORDINANCES AND PROGRAMS

Part I of this Plan provides an overview of existing Town stormwater management ordinances and programs. The primary purpose of this overview is to provide a framework for comparing existing programs and ordinances with federal and State mandates as well as voluntary stormwater management options.

I.1 CHESAPEAKE BAY PRESERVATION CHAPTER TO THE TOWN OF HERNDON COMPREHENSIVE PLAN

The purpose of the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan is to establish a long-range vision for how to protect and restore the Town's creeks and streams as well as the natural habitats of the Chesapeake Bay and the Potomac River. The Chapter contains an inventory and analysis of the Town's water environment and establishes goals, policies, and action plans.

Section 15.446.1 of the Code of Virginia requires that each municipality in Virginia develop a comprehensive plan. The Virginia General Assembly, responding to growing citizen concern for the health of State waters and in particular the Chesapeake Bay and its tributaries, enacted the Chesapeake Bay Preservation Act in 1988. Section 10.1-2109.B of the Act states that "Counties, cities, and towns in Tidewater Virginia shall incorporate protection of the quality of State waters into each locality's comprehensive plan consistent with the provisions of this chapter."

In order to comply with the Chesapeake Bay Preservation Act, the Town, with assistance from the Northern Virginia Planning District Commission (now the Northern Virginia Regional Commission), adopted the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan on May 26, 1998. Actions relating to stormwater quality and quantity management in the Town (excluding those related to the enforcement of existing regulations or the continuation of existing programs) include the following.

(1) Strengthen the requirements to qualify for the Town's CBPO [Chesapeake Bay Preservation Ordinance] opt-out provisions or eliminate the opt-out provision altogether to require the use of stormwater quality BMPs for all development.
(2) Plan and implement cooperative/regional stormwater management controls, where appropriate, to improve overall water quality management and decrease the overall maintenance burden.
(3) Perform a review of the Town's Zoning and Subdivision ordinances to identify opportunities for reducing impervious surface space requirements during the site plan development and review process.
(4) Amend the Town's Zoning Ordinance to include site design guidelines that encourage clustering in order to preserve sensitive soil areas as permanent open space.

(5) Adopt and implement a Stormwater Management Ordinance that will comprehensively regulate stormwater volume in addition to stormwater quality.
(6) Update FEMA floodplain maps to reflect new development, loss of wetlands, and fill occurring in and around the Town.
(7) Establish a Town Household Hazardous Materials Drop-Off and Collection Program for homeowners, to operate at specific times, such as during Fall and Spring clean ups. The Town would arrange for transfer of materials to Fairfax County facility, perhaps with special volunteer assistance.
(8) Work closely with the Northern Virginia Soil and Water Conservation District to implement a strategic nonpoint source pollution program for the Town that will prevent pollution at its sources.
(9) Implement a public education campaign aimed at enforcing and strengthening the Town's animal waste control laws.
(10) Develop a database of households with above ground storage tanks and implement an education program aimed at preventing accidental discharges.
(11) Implement a water conservation education program using water billing statements as a distribution vehicle. Use the City of Fairfax's program as a model.
(12) Implement a systematic, Town-wide program to update environmental and water quality baseline data to ensure that incorrect or outdated information is not carried forward into future planning and assessment efforts.
(13) Expand the Town's water quality monitoring efforts through the use of local volunteers and environmental grounds or by contracting with the Fairfax County Health Department.
(14) Map mature forest areas and groves within the Town in order to better utilize the Town's Urban Forestry and Landscaping Ordinance and to provide the Town with a better picture of how reforestation and protection can better link existing resources.
(15) Develop and implement a Town-wide watershed restoration and protection plan in order to improve water quality and wildlife habitat. Use water quality monitoring data in order to pinpoint potential sources of pollution and a stream reach assessment, including an inventory of denuded stream reaches, as the basis of the plan. To the extent practicable, incorporate these restoration and planning principles into the Town's Stormwater Management Plan currently under development.
(16) Help coordinate or provide proper maintenance to the newly reforested section of Sugarland Run from Dulles Toll Road to the W&OD Trail.
(17) Devise and incorporate detention capabilities into denuded sections of Sugarland Run between Dulles Toll Road and the W&OD Trail.

All recommendations in this Plan are cross-checked in Appendix C to examine the extent to which they satisfy the goals of the Chesapeake Bay Preservation Chapter.

I.2 FLOODPLAIN OVERLAY DISTRICT

In 1979, the Federal Emergency Management Agency (FEMA) conducted a study of flooding potential and hazards in Herndon as part of its national flood insurance program. The study was meant to be used as a tool to assist the Town in effective floodplain management. The major results of this study was a Flood Insurance Rate Map for the Town (effective August 1, 1979)

and the subsequent adoption of a Floodplain Overlay District to protect the 100-year floodplain as part of the Town's Zoning Ordinance (Article VIII).

No development is allowed in the Floodplain Overlay District unless the effect of such development is fully offset by accompanying improvements that have been approved by all appropriate State and local authorities. The following uses, however, are allowed if the underlying zoning permits and given that they do not require structures, fill, or storage of materials and equipment.

- Agricultural uses such a general farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, and sod faring and wild crop harvesting.
- Public and private recreational uses and activities such as parks, day camps, picnic grounds, golf courses, boat launching and swimming areas, hiking and horseback riding trails, wildlife and nature preserves, game farms, fish hatcheries, trap and skeet ranges and hunting and fishing areas.
- Utilities and public facilities and improvements such as railroads, streets, bridges, transmission lines, pipelines, water and sewage treatment plants, and other related uses.

While the official FEMA map has not been redrawn since 1979, numerous changes to the floodplain designation have been granted by the Town Council and FEMA based on detailed, development-specific hydrologic studies. In these cases, Letters of Map Revision (LOMRs) are submitted to FEMA for technical review and incorporation by reference.

I.3 EROSION AND SEDIMENT CONTROL ORDINANCE

The purpose of the Town's Erosion and Sediment Control Ordinance is to prevent the degradation of local soil and water resources as a result of land disturbing activities by ensuring that the owner of the property on which land disturbing activities are being carried out provides adequate control of erosion and sedimentation. The Town's E&S Ordinance also requires the land owner to take necessary measures to preserve and protect trees and other vegetation during all phases of any land disturbing activity. The Town's E&S Ordinance implements the Erosion and Sediment Control Law (§10.1-560, *et seq*, Code of Virginia) and the Erosion and Sediment Control Regulations (VR 625-02-00) as well as the Chesapeake Bay Preservation Act.

Under the E&S Ordinance, land owners proposing a nonexempt regulated land disturbing activity of greater than 10,000 square feet (or 2,500 square feet in a Chesapeake Bay Preservation Area) must first submit an Erosion and Sediment Control Plan to the Town Department of Public Works. The Town's erosion and sediment control requirements are detailed in Chapter 26, Article III of the Town Code.

I.4 CHESAPEAKE BAY PRESERVATION ORDINANCE

The Chesapeake Bay Preservation Act establishes a program to protect environmentally sensitive features, which, when disturbed or developed incorrectly, lead to reductions in water quality. The Act provides a framework for local governments to identify these sensitive areas and to

enact regulations to better plan land use activities on and around them. Under the Act, the Town of Herndon is required to:

- protect existing high quality State waters and restore all other State waters to a condition or quality that will permit all reasonable public uses, and will support the propagation and growth of all aquatic life which might reasonably be expected to inhabit them;
- safeguard the clean waters of the Commonwealth from pollution;
- reduce existing sources of pollution; and,
- conserve water resources in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

In accordance with the guidelines established by the Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20 *et seq*), Chesapeake Bay Preservation Areas (CBPAs) were mapped and the Town adopted a Chesapeake Bay Preservation Overlay District as part of the Zoning Ordinance on January 22, 1991. The mapping of these areas, which include Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) was based on a survey of existing natural resources documentation as well as field surveys.

Resource Protection Areas (RPAs) are lands at or near the "shoreline" (a regulatory definition which in Herndon means tributary streams) containing components which are especially sensitive because of (1) the intrinsic value of the ecological and biological processes they perform which benefit water quality, or (2) the potential for impacts that may cause significant degradation to the quality of State waters. The RPA designation within the Town includes a 100-foot vegetated buffer area located adjacent to and landward of all tributary streams and nontidal wetlands connected by surface flow and contiguous to tributary streams. These lands are excluded from development in most instances.

Resource Management Areas (RMAs) include land types that, if improperly developed, have the potential for causing significant water quality degradation or for diminishing the functional value of the RPA. The RMA within the Town incorporates, but is not limited to concentrations of the following land categories: floodplains; highly erodible soils; steep slopes greater than 15%; and nontidal wetlands not connected by surface flow to tributary streams.

The entire Town outside RPA and IDA areas (discussed below) has been designated as an RMA. However, a property may be excluded from the RMA if it can be demonstrated that RMA performance criteria are met in an area contiguous to and within 100 feet of the boundaries of the RPA and that the property is not characterized by floodplains, wetlands, highly erodible soils, or steep slopes greater than 15%. This option is frequently exercised in practice.

Intensely Developed Areas (IDAs) include areas in which pre-Chesapeake Bay Preservation Act development is concentrated and little of the natural environment remains. The concentrated nature of development in IDAs may not allow for the implementation of specific performance criteria in the Town's Ordinance. As a result, all development in the IDA is considered to be redevelopment and may be exempt from the buffer requirements of the RPA.

If the CBPA boundaries include a portion of a lot, parcel or development project, then only that portion must comply with the Town's Ordinance. However, division of property does not constitute an exemption from the Ordinance.

The CBPA "General Performance Criteria" that apply to all land within RPAs and RMAs are outlined in Appendix A.2. The two most important of these criteria from a stormwater management perspective include the following.

- For new development, the post-development nonpoint source pollution runoff load shall not exceed the predevelopment load based upon average land conditions (41% imperviousness for the Town).
- Redevelopment of any site not currently served by water quality best management practices shall achieve at least a 10% reduction of nonpoint source pollution in runoff compared to the existing runoff load from the site.

Implementation of the Chesapeake Bay Preservation Ordinance at the staff level is a cooperative responsibility of the Department of Community Development and the Department of Public Works. The only provision of the Ordinance, which is not the direct responsibility of the Town, is the 5-year septic pump-out provision. Enforcement of this provision is the responsibility of the Fairfax County Health Department.

I.5 FAIRFAX COUNTY PUBLIC FACILITIES MANUAL

In lieu of adopting a separate Stormwater Management Ordinance, the Town has adopted relevant portions of the Fairfax County Public Facilities Manual relating to stormwater management facilities. The purpose of these criteria is to require new development to provide stormwater detention to prevent flooding and streambank erosion caused by increased runoff from new impervious surface area. Fairfax County's program requires the following, as compared to the Virginia Stormwater Management Regulations.

Criteria	**Fairfax County**	**State Regulations**
Frequency	2-Year/10-Year	2-Year (vel.) 10-Year >Accepted
Duration	2-Hr <20 Ac 24-Hr >20 Ac	24-Hr
Distribution	FFX unit Hyd. For 2-Hr duration SCS Type II for 24-Hr duration	SCS Type II

I.6 STORMDRAIN AND SANITARY SEWER MAINTENANCE PROGRAM

To prevent the Town's sanitary sewer system from becoming a source of pollution (primarily fecal coliform bacteria and nutrients), the Town has implemented an extensive infiltration and inflow (I&I) program which consists of regular surveillance and repair of the sanitary conveyance systems through the use of Insituform technology and other main improvement methods. Over the last 12 years, the Town has rehabilitated 22,400 feet (4.2 miles) of sewer main with Insituform. In fiscal year 1999, 3,500 feet of main were scheduled for relining.

The Town does not have a similar program for inspecting its stormwater conveyance system. The Town performs a physical inspection of drain inlets twice a year to ensure that no clogging is taking place. However, there is no inspection of actual stormwater lines, nor is there a means of inspecting for illicit discharges to the system. Some means of inspecting for potential illicit discharges will be required under forthcoming NPDES Phase II requirements (see Section II.2.1).

I.7 POLLUTION PREVENTION PROGRAMS

Pollution prevention covers a broad range of programs aimed at modifying the human behavior or activity that causes pollution in the first place. Pollution prevention programs must be framed in a way that addresses specific pollution problems and provides viable alternatives to the pollution-generating activity. The Town, primarily through the Department of Community Development's community forester, is currently beginning to develop a pollution prevention program with the help of the Northern Virginia Soil and Water Conservation District.

Watershed awareness educational programs are conducted by volunteer organizations such as the Runnymede Rangers, Tree Action, the Friends of Runnymede Park, and the Friends of Sugarland Run in cooperation with the Parks and Recreation naturalist and the Community Development community forester. Well established stream clean-ups, sponsored jointly by Tree Action and the Town since 1987, have always included a public education component.

The Town intends to eventually implement a storm drain stenciling or labeling program to warn the public about dumping materials into stormdrains (a major source of oil and antifreeze contamination). The Town is investigating the potential for using a labeling technique that is different from the traditional "stenciling" approach. Instead, a plaque that can be affixed to the stormdrain structure could be used. The Town has not yet determined a final approach and is attempting to identify an outside funding source.

Finally, the Town staff continues to work successfully with the Herndon Centennial Golf Club to mitigate water quality problems associated with that particular land use. A number of actions have been taken to minimize adverse impacts to water quality including:

(1) use of organic-based slow release nitrogen sources;
(2) deep aerification of fairways and tees to four inches so that pesticides and nutrients will be absorbed before they have a chance to runoff;
(3) new spray equipment that allows staff to apply limited pesticides only to targeted areas;
(4) establishment of no-cut areas to act as filters for surface water and to provide habitat;
(5) pesticide application by two licensed applicators and one registered technician;
(6) installation of trash racks on the two main stormdrains that outfall through the golf course;
(7) integrated pest management combining cultural, biological, and chemical controls; and,
(8) course maintenance practices have been based on evaluations by an agronomist from the USGA Turf Advisory Service.

I.8 PRO RATA SHARE OFF-SITE DRAINAGE FACILITY PROGRAM

The purpose of a pro rata share program is to require land developers to pay their share of the cost of providing off-site drainage improvements made necessary, or required at least in part, by the development of land. The ultimate objective of the pro rata share program is to provide a *supplemental* funding source to implement adequate drainage facilities and to minimize damage to the drainage network and downstream receiving waters. Section 15.2-2243 of the Code of Virginia allows a locality to "provide in its subdivision ordinance for payment by a subdivider or developer of land of the pro rata share cost of providing reasonable and necessary sewerage, water, and drainage facilities, located outside of the land owned or controlled by the subdivider or developer…"

The maximum amount of revenue that can be collected through this program is limited to the increased cost of drainage facilities that are required to accommodate increased runoff from new development.

Because of a significant change in the Code of Virginia in 1990, pro rata funds may be allocated towards drainage projects located within an entire watershed. Formerly, improvements must have been located downstream of the development project. This change has allowed funds to be pooled for the implementation of priority projects throughout a watershed. However, before collecting pro rata funds in a particular watershed, the Code of Virginia requires that the locality adopt a general drainage improvement program.

The Town of Herndon's current rate structure and drainage improvement program was established in 1973 based on a study by Johnson and Williams, Consulting Engineers. At that time, the Town Council set the pro rata share rate at $2,000 per impervious acre for the Sugarland Run watershed and $3,500 per impervious acre for the Folly Lick Branch watershed.

The Town's rate structure was based on the proportionate share of the total cost of all required drainage improvements within each subwatershed that are related to new development or planned to offset the impact of stormwater from new development. Items that may be included are land acquisition, design, utility relocation, construction, and administrative costs associated with these projects. The proportionate share of the total cost of improvements was calculated by

determining the increase in imperviousness as a result of the development and comparing it to the difference between existing watershed imperviousness conditions and future build out conditions. Under Herndon's program, the cost of on-site stormwater management improvements is always considered the responsibility of the developer.

There is a stated need to update the Town's Pro Rata Share Program to reflect current stormwater management needs and anticipated growth projections.

I.8.1 Fairfax County's Pro Rata Share Program

The following is an overview of Fairfax County's pro rata share program as a potential framework for revision of the Town's program. It should be noted that while Fairfax County contains 30 watersheds, the Town would be dealing with as few as three watersheds – Sugarland Run, Folly Lick Branch, and Horsepen Run.

CRITERIA FOR INCLUDING PROJECTS IN PROGRAM: In order for a project to be included in a pro rata share program, it must meet certain qualifications. Under Virginia Code, it must be necessitated or required, at least in part, by the construction or improvement of the subdivision or development. Generally, on a watershed basis, all drainage improvements with undeveloped land upstream meet this qualification. Most regional BMPs, inadequate roadway crossings, and streambank erosion control projects are included in Fairfax County's program.

PROJECT COSTS: The cost estimate of each project in the program is updated using current design, land acquisition, construction, and administrative costs. Projects are then divided by watershed and their costs totaled to determine the total watershed costs for improvement projects contained in the program. Costs are updated semi-annually to reflect adjustments in accordance with the construction cost index as published in the Engineering News Record. A more comprehensive cost review is conducted on an as needed periodic basis.

LAND DEVELOPMENT: The current and projected ultimate land use levels are used to determine the increase in impervious area. Recent aerial photographs are used to input the current land use, or development level. The ultimate land use development level is prepared using the Comprehensive Plan and current zoning maps. By finding the current land use scenario and deducting it from the ultimate developed land scenario, a projected increase in impervious area is calculated.

RATE DETERMINATION: The total cost of the proposed projects within each watershed is multiplied by the ratio of the increase in impervious area of the watershed to the total impervious area at ultimate buildout. This provides the dollar amount of the total cost of all projects within each watershed that can be assessed to new development under the uniform pro rata share program.

This dollar amount that can be charged as pro rata share is then divided by the increase in impervious area for the specific watershed. This yields the cost per increase in impervious acre.

SELECTION CRITERIA FOR PROJECT IMPLEMENTATION: The procedure for implementation of specific projects is based on a priority system. For any project to be implemented with pro rata share funds it must be included in the pro rata share program. The following priority system is used for project implementation in Fairfax County.

1. To achieve State and federally mandated water quality requirements.
2. To alleviate structures from flooding.
3. To alleviate severe bank and channel erosion.
4. To alleviate minor bank and channel erosion.
5. To alleviate yard flooding.
6. To alleviate street flooding.

In addition, in limited situations the priority of projects may be administratively adjusted based on opportunities to participate with developers who wish to contribute over and above the minimum pro rata share requirements. Priority adjustments will be considered on a case by case basis.

I.8.2 Example of How to Determine Pro Rata Share

A hypothetical example of a pro rata share program assessment for Herndon might be as follows.

The Town anticipates that future streambank erosion mitigation, drainage improvement, and regional BMP implementation projects will cost $950,000. The Town determines that its current rate of imperviousness in the Sugarland Run watershed is 41%, or 1,102 acres, and its anticipated build-out rate of imperviousness is 50% (hypothetically based), or 1,344 acres. This means that there is an anticipated increase in imperviousness of 242 acres as a result of new development.

The rate is determined by taking the total cost of the proposed projects ($950,000) multiplying it by the ratio of the increase in impervious area to the total impervious area at ultimate build-out (242/1,344, or 0.18006). The result, $171,057, is the amount that can be assessed to new development under the program. To arrive at the cost that can be charged to a developer per increase in impervious acreage, the total dollar amount that can be charged under pro rata share ($171,057) is divided by the total increase in impervious area (242). The result is $706.85 per impervious acre.

Therefore, should a developer propose a project that increased imperviousness by 2.5 acres, the Town would collect $1,767.13.

I.8.3 1991 Town Stormwater Runoff Analysis

In 1991, the Town conducted an analysis of present and future stormwater runoff/land use conditions within the Town limits. The results were derived from the October, 1991 Zoning Map.

		EXISTING CONDITIONS		POST 2010 BUILDOUT	
Watershed	**Acreage**	**"C" Factor**	**% Impervious**	**"C" Factor**	**% Impervious**
Horsepen Run	451.4	0.55	41	0.63	52
Folly Lick Branch	1,045.3	0.51	39	0.53	42
Sugarland Run	1,254.1	0.54	42	0.66	57
Town-Wide	2,750.8	0.53	41	0.61	50

While primarily used as the basis for Chesapeake Bay Preservation Ordinance calculations (and not for the Town's Pro-Rata Share Program) the analysis is useful for informational and historical purposes.

MATRIX OF TOWN STORMWATER MANAGEMENT ORDINANCES AND PROGRAMS

Ordinance/ Program	Mandated/ Optional	Date Adopted	Major Stormwater Management Components	Administration
Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan	Mandated (Chesapeake Bay Preservation Act).	May 26, 1998	Establishes goals, policies, and action plans on stormwater quality and quantity issues.	Shared responsibility of Department of Community Development (DCD) and Department of Public Works (DPW).
Floodplain Overlay District (Article VIII)	Mandated for Town residents to receive flood insurance (National Flood Insurance Act/Virginia Flood Damage Reduction Act).	August 1, 1979	Prohibits development in floodplain unless the effect of such development is fully offset by accompanying improvements.	Shared responsibility DCD and DPW.
Erosion and Sediment Control Ordinance (Chapter 26)	Mandated (Virginia Erosion and Sediment Control Law).	September 28, 1993	Requires an Erosion and Sediment Control Plan for all land disturbing activities of 10,000 square feet or more (2,500 SF in areas subject to the Town's CBPO).	DPW.
Chesapeake Bay Preservation Ordinance (Article X)	Mandated (Chesapeake Bay Preservation Act).	January 22, 1991	Establishes stormwater quality performance criteria and other requirements for Chesapeake Bay Preservation Areas. No-net-increase in nonpoint source pollution from average jurisdiction-wide conditions for new development and 10% reduction in nonpoint source pollution from existing site conditions for redevelopment.	Shared responsibility DCD and DPW.

MATRIX OF TOWN STORMWATER MANAGEMENT ORDINANCES AND PROGRAMS

Ordinance/ Program	Mandated/ Optional	Date Adopted	Major Stormwater Management Components	Administration
Fairfax County Public Facilities Manual	Optional		Establishes stormwater volume control criteria Town-wide in lieu of the adoption of a separate Stormwater Management Ordinance. New development must control two-year/10-year frequency, two-hour (<20 acres)/24-hour (>20 acres) duration.	DPW.
Stormdrain and Sanitary Sewer Maintenance Program	Optional (future mandate under Clean Water Act).		Program to ensure the structural integrity of the Town's stormdrain and sanitary sewer system.	DPW.
Pollution Prevention Programs	Optional (future mandate under Clean Water Act).		Various public education and outreach programs; stormdrain labeling program; Centennial Golf Club pollution prevention program.	Shared responsibility DCD and Parks and Recreation.
Pro Rata Share Off-Site Drainage Facility Program	Optional	June 12, 1973	Program to provide a supplemental funding source to implement adequate drainage facilities and to minimize damage to downstream receiving waters. Maximum revenue is limited to the increased cost of facilities required to accommodate increased runoff.	DPW.

PART II
EXISTING AND POTENTIAL STORMWATER MANAGEMENT MANDATES

Part II provides an overview of existing stormwater management mandates as well as a description of potential mandates that the Town is likely to face in the foreseeable future. Each section contains a discussion of the mandate (organized by federal and State originating legislation), its impact (or potential impact) on the Town, and issues related to the implementation of the existing or future mandate. The reader is referred to Appendix A for a full summary of relevant federal and State stormwater management regulations.

II.1 EXISTING MANDATES

II.1.1 Federal Clean Water Act Section 404 (Wetlands) Virginia Water Protection Permit

OVERVIEW: The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency, under Section 404 of the federal Clean Water Act, regulate the fill or disruption of the Town's wetlands. In Virginia, the mandates of the CWA Section 404 are enforced by the Department of Environmental Quality as Virginia Water Protection (VWP) permits (non-tidal wetlands). The U.S. Army Corps of Engineers has established a system of Nation-Wide Permits (NWPs) which allow for expedited review of small wetland/stream channel fill projects. Current NWP guidelines became effective February 11, 1997, although the Norfolk District of the Corps is in the process of finalizing replacement "Regional Permits."

IMPACT ON THE TOWN: The mandates of Section 404 primarily impact the development community. The Virginia Chesapeake Bay Preservation Area Designation and Management Regulations (through the Town's Chesapeake Bay Preservation Ordinance) require that a developer provide evidence to the Town that all proper wetland permits have been obtained before development may begin. It is the responsibility of the Town to ensure that this is indeed the case. Permits must also be obtained for all municipal projects, including Town road and utility projects (smaller road and utility projects are covered under NWPs 12 and 14).

ISSUES: The general locations of major wetlands in the Town are identified in the Chesapeake Bay Preservation Chapter of the Town's Comprehensive Plan. However, there has been no attempt made to identify wetland areas outside of the Folly Lick Branch and Sugarland Run mainstem areas. Delineation of these inland wetlands is required under Section 404 of the Clean Water Act during the development process using the U.S. Army Corps of Engineers' Wetlands Delineation Manual (1987 version). The Town should to pursue proactive screening-level field mapping of potential non-tidal wetland areas for planning purposes.

STATUS ON COMPLIANCE: The Town is fully compliant with wetland-related mandates.

II.1.2 National Flood Insurance Act and Flood Disaster Protection Act Virginia Flood Damage Reduction Act

OVERVIEW: The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 set up a process that requires local governments to adopt floodplain management criteria developed by the Federal Emergency Management Agency in order for residents in flood prone areas to qualify for federal flood insurance. The minimum criteria are found in 44 CFR 60.3. The National Flood Insurance Act is mimicked in the Code of Virginia as the Virginia Flood Damage Reduction Act (§10.1-600). Once a community has adopted a program, it is up to that community to enforce its provisions. However, FEMA conducts random "Community Assistance" visits that are designed to check or monitor the local flood management program. Although the State has no authority over the National Flood Insurance Program, the Department of Conservation and Recreation's Floodplain Management Program does provide technical assistance to communities on floodplain management issues.

IMPACT ON THE TOWN: Effective August 1, 1979, the Town's floodplain management program, formalized as the Town's Floodplain Overlay District, was accepted into the National Flood Insurance Program.

ISSUES: Although the FEMA floodplain maps are the primary legal basis for restricting encroachment into the floodplain, the actual limits of the 100-year-floodplain have changed over time due to development in and around the Town, loss of wetlands, and fill. The partial construction of the Fairfax County Parkway and the completion of the Herndon Parkway are significant contributors to changes in the limits of the 100-year floodplain. The Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan calls for the Department of Public Works to initiate an update of the FEMA floodplain maps within the next five years. According to FEMA representatives, there is very limited funding available to localities for updating floodplain maps. The Town would need to request a map update by sending FEMA's Region III office a letter describing exactly what needs to be done, justifications for the map, and include any information on areas that have already been re-mapped. The request is placed on a priority list depending on the need for the project. The priority list is always changing and there is usually a backlog of 70 applicants. There are only 5 to 10 studies conducted in any one year, therefore it takes from 1 to 5 years before anything is usually initiated.

According to the FEMA Technical Services Division, FEMA is currently undergoing a five year nation-wide screening exercise to better assess the mapping and technical needs of localities. As a result, the timing for the Town to submit a request for remapping is particularly opportune.

In addition, the Town could apply for a grant under the Flood Prevention Protection Fund (§10.1-603.16, Code of Virginia). The FPPF was established by Virginia, and is

administered by the Division of Soil and Water Conservation, to provide localities a 50% match for flood prevention or protection projects, including floodplain studies and mapping. Under this program, the Town would contract-out the floodplain study, which would be submitted to FEMA for incorporation into its program. The drawback is that matching funds are required.

The Town has the option of participating in the Community Rating System (CRS), which provides a premium reduction for communities exceeding minimum flood management criteria. However, conversations with the State and FEMA have brought the Town to the conclusion that the program benefits are not worth the extra effort.

STATUS ON COMPLIANCE: The Town is fully compliant with floodplain-related mandates.

II.1.3 Federal Chesapeake Bay Program
Chesapeake Bay Preservation Act/Chesapeake Bay Preservation Area Designation and Management Regulations

OVERVIEW: The 1983 Chesapeake Bay Agreement, fostered through the U.S. Environmental Protection Agency, established a cooperative effort among Virginia, Maryland, Pennsylvania, and the District of Columbia to improve water quality in the Chesapeake Bay. The most widely known result of this agreement in Virginia is the Chesapeake Bay Preservation Act of 1988 which is implemented in Herndon as the Chesapeake Bay Preservation Ordinance.

The Chesapeake Bay Local Assistance Department (CBLAD) has approached Chesapeake Bay Preservation Act implementation in three phases. Phase I is program development and ordinance adoption. Phase II is the incorporation of water quality into local comprehensive plans. Phase III involves (1) reconciliation of all local ordinances involving water quality and (2) establishing a system of State oversight over local program implementation. The Town is in compliance with Phase I and Phase II of Chesapeake Bay Act implementation.

IMPACT ON THE TOWN: The Town adopted a Chesapeake Bay Preservation Ordinance on January 22, 1991, which was found consistent with the Chesapeake Bay Act Regulations by the Chesapeake Bay Local Assistance Board. The Town adopted amendments to its Comprehensive Plan in the form of a Chesapeake Bay Preservation Chapter on May 26, 1998. CBLAD is embarking on a program to enforce or implement Phase III.

ISSUES: With regard to the Town's Chesapeake Bay Preservation Ordinance, the Chesapeake Bay Preservation Chapter to the Herndon Comprehensive Plan calls for the Town to tighten or eliminate the RMA opt-out provisions of its Ordinance. Further, the Chesapeake Bay Preservation Area Designation and Management Regulations are currently undergoing review and it is likely that changes will be made in 2000 or 2001.

Discussions with CBLAD staff has indicated that any changes affecting Herndon should be minor and may require very slight administrative amendments.

The only weak area of the Town's Phase I program is its private BMP maintenance inspection program. Although a maintenance agreement is part of the establishment of any private BMP, the Town has no means of follow-up to ensure that maintenance is adequately being performed. A cost-efficient approach used in Prince William County (§720.15 of the Prince William County Public Facilities Manual) is to require the owner of a private facility to provide annual inspections by a certified professional engineer and to provide a report to the Town which addresses the maintenance needs of the facility in accordance with the inspection.

Of potential concern to the Town is that CBLAD staff has recently taken on the issue of what defines a Resource Protection Area (RPA) under the Regulations. Under the Town's Ordinance, RPAs have been mapped for Folly Lick Branch, Sugarland Run, and portions of Spring Branch. The criterion used for these designations (as with most other Tidewater localities) is that the streams show up as "tributary streams" on USGS 7 1/2 minute quadrangle maps. However, CBLAD, in a letter to Arlington County, has held that limiting RPAs to these USGS "blue lines" when better information is available locally and/or through the site development process, is a violation of the intent of the Chesapeake Bay Preservation Act. In Arlington, an analysis has shown that the expanded RPA would double the number of parcels affected by the Act. This issue could have major implications for the Town, which contains a number of smaller free flowing streams not presently designated as RPA. There are many legal and practical questions associated with this issue – especially as it relates to retroactively designating RPAs. The Town should wait for additional legal guidance from CBLAD and the Commonwealth's Attorney General.

With regard to Phase III enforcement, the Town filing system makes no provision to distinguish whether opt-outs and/or waivers are approved or disapproved. This may make it difficult to make future reports to CBLAD. NVRC has approached CBLAD to determine whether there is a better way to track opt-outs granted by the Town.

STATUS ON COMPLIANCE: The Town is fully compliant with Phase I and Phase II Chesapeake Bay-related mandates – although there are several amendments to the Town's Ordinance that would strengthen implementation. In addition, the Town may need to readdress RPA designations depending upon the outcome of issues also discussed above. The BMP maintenance aspect of the Town's program is the only existing compliance issue of significant note. It is likely that the Town would easily comply with the reconciliation requirements of Phase III. However, it is also likely that the Town will have to change its opt-out and waiver tracking system in order to comply with a future CBLAD enforcement protocol.

II.1.4 Virginia Erosion and Sediment Control Law

OVERVIEW: The Erosion and Sediment Control Law of 1988 deals primarily with the control of erosion and sediment during the development process. The Law is codified as Section 21-89.1 *et seq* of the Code of Virginia. The regulations are applicable to land development projects disturbing 10,000 square feet or more, except in locally designated Chesapeake Bay Preservation Areas, where the Regulations are applicable at 2,500 square feet of disturbance. The Town has a jurisdiction-wide RMA; therefore, the 2,500 square feet threshold is applicable in all areas of Herndon.

IMPACT ON THE TOWN: The Town has adopted an Erosion and Sediment Control Ordinance that fully meets the requirements of State mandates.

ISSUES: None.

STATUS ON COMPLIANCE: The Town is fully compliant with erosion and sediment control-related mandates.

II.2 FUTURE MANDATES

II.2.1 Federal Clean Water Act Section 402 National Pollution Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) Permit
Virginia DEQ Pollution Discharge Elimination System Phase II MS4 Permit

OVERVIEW: As explained in further detail in Appendix A, Congress amended the CWA in 1987 to require phased NPDES requirements for municipal stormwater discharges. Phase I of NPDES (which is already being implemented) requires a two-part application process for discharges from systems serving large (500,000 or more people) or medium (100,000 to 500,000 people) municipalities.

Regulations for smaller urban municipalities (Phase II) with populations under 100,000 were published in the Federal Register on December 8, 1999. Herndon is noted specifically as being subject to NPDES Phase II under 40 CFR Parts 122 and 123. The Phase II permit process is greatly streamlined over the Phase I permit process. For instance, Phase II localities are encouraged to file a Notice of Intent (NOI) to comply with the requirements of a General Permit, rather than going through the process of applying for an individual permit. Once the permit is issued, a Phase II locality will have five years to comply with the permit's requirements. The current deadline to submit either an NOI to comply with General Permit requirements or an alternative permit application is March 10, 2003. Localities will be expected to achieve full implementation of the Phase II permit requirements by 2008.

Despite streamlining, all Phase II permit holders will have additional burdens placed on them to more closely account for, and minimize nonpoint source pollution within their borders. At a minimum, Phase II localities opting to comply with a General Permit will

be required to meet six minimum control measures. These minimum control measures are outlined in the following table. Required and recommended actions for each control are so noted.

NPDES MINIMUM CONTROL MEASURES	**REQUIRED AND RECOMMENDED* ACTIONS**
(1) Public Education and Outreach on Stormwater Impacts	• Brochures or fact sheets.* • Speaking engagements.* • Public service announcements.* • Educational programs in local school.* • Storm drain stenciling/labeling.* • Community clean-up events.*
(2) Public Involvement/Participation	• Comply with state and local public notice requirements. • Citizen stormwater committee.* • Citizen volunteer opportunities.*
(3) Illicit Discharge Detection and Elimination	• Develop a map of the stormsewer system, indicating outfall locations and receiving waters. • Prohibit by law illicit discharges into the MS4. • Develop and implement a plan to detect and address illicit discharges (i.e., dry weather flow monitoring). • Inform public employees, businesses, and the general public of hazards associated with illicit discharges.
(4) Construction Site Stormwater Runoff Control	• Adopt an ordinance that requires implementation of erosion and sediment controls on construction sites greater than one acre. • The ordinance must also specify proper measures for controlling waste at a site, such as concrete, truck washout, chemicals, litter, and sanitary waste. • Have procedures for site plan review, inspection and enforcement, and public complaints.
(5) Post-Construction Stormwater Management in New Development and Redevelopment	• Adopt an ordinance to address runoff from new development and redevelopment. • Implement strategies with a combination of structural and/or nonstructural BMPs. • Ensure adequate long-term operation and maintenance of BMPs.
(6) Pollution Prevention/Good Housekeeping for Municipal Operations	• Develop and Operations and Maintenance Program to prevent or reduce pollutant runoff from municipal operations. • Provide municipal employee training to prevent and reduce stormwater pollution.

A guidance menu of BMP measures to meet NPDES minimum requirements is anticipated to be issued by the U.S. EPA on October 27, 2000. Town staff attended a stormwater workshop on NPDES requirements on February 15, 2000.

IMPACT ON THE TOWN: The impact of NPDES to the Town could be fairly significant. In particular, the Town will need to invest more heavily in public education and outreach programs (a goal of the Chesapeake Bay Chapter to the Town of Herndon Comprehensive Plan). The Town's efforts to monitor its sanitary sewer system will need to be mimicked with its storm sewer system and additional mapping will be necessary. Currently, the Town performs a physical inspection of stormdrain inlets (not actual piping) twice a year and does not have a means of checking for illicit discharges.

Construction site stormwater runoff control requirements are largely covered by the Town's Erosion and Sediment Control Ordinance. While the Town's Chesapeake Bay Preservation Ordinance will go a long way towards meeting the post-construction stormwater management requirements, issues concerning BMP maintenance need to be addressed.

II.2.2 Federal Clean Water Act Section 303(d) Total Maximum Daily Load (TMDL) Regulations

OVERVIEW: Section 303(d) of the Clean Water Act requires that states identify pollutant-impaired stream segments and report them to the U.S. Environmental Protection Agency every two years (known as the "303(d) list"). In the late 1990s, environmental organizations around the nation successfully sued the U.S. EPA to implement a largely ignored component of Section 303 which requires states develop a TMDL, or Total Maximum Daily Load, for each stream segment on the 303(d) list. There are presently 240 impaired stream segments in Virginia, and the Commonwealth has signed a Memorandum of Understanding with the U.S. EPA to develop TMDLs for all of them by the year 2010.

A TMDL is a plan that allocates by source the maximum load of a specific pollutant that can enter a water body without exceeding in-stream water quality standards. For instance, if a stream segment is impaired for fecal coliform, all sources of fecal coliform would need to be identified. Each source would then be assigned a numerical limit to meet in-stream water quality requirements. While the TMDL process is a State responsibility, local governments will be significantly affected when it comes time to implement load reductions by source.

Although Sugarland Run is not on the most recent (1998) 303(d) list, most of the 14 Northern Virginia watersheds that are on the list are there due to violations of fecal coliform standards. As outlined in the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan, fecal coliform levels in Folly Lick Branch and Sugarland Run are routinely elevated.

IMPACT ON THE TOWN: Herndon has a vested interest to avoid the placement of Sugarland Run on Virginia's 303(d) list for fecal coliform. Any ongoing or new programs (for instance those that will be required to meet NPDES requirements) should take into consideration the need to reduce fecal coliform pollution.

II.2.3 Chesapeake Bay Preservation Act/Chesapeake Bay Preservation Area Designation and Management Regulations

OVERVIEW: As noted previously, CBLAD will eventually embark on a program to enforce or implement Phase III of the Bay Act Regulations. The Town should work with CBLAD now to make the administrative transition for reporting as smooth as possible. NVPDC has been in contact with CBLAD and will develop a draft reporting protocol for the Town.

In addition, the Chesapeake Bay Preservation Area Designation and Management Regulations are currently undergoing review and it is likely that some changes to the Town's Ordinance will be required.

PART III
OPTIONAL STORMWATER MANAGEMENT PROGRAMS

III.1 STORMWATER MANAGEMENT REGULATIONS

OVERVIEW: In 1989 the General Assembly adopted the Stormwater Management Act (§10.1-603.2, et seq., Code of Virginia), enabling the establishment of comprehensive stormwater management programs. The Department of Conservation and Recreation promulgated the Virginia Stormwater Management Regulations in 1990, which were substantially revised in 1998. The State stormwater management program addresses the permanent changes in stormwater runoff than occur as a result of land development. The Regulations specify minimum technical and administrative requirements for local programs and State agency projects and are applicable to development projects that disturb one acre of land or more.

Localities are provided the option of adopting local stormwater management programs. Localities choosing to adopt a stormwater management program must comply with the minimum criteria established in the Regulations. These Regulations require that local stormwater management ordinances include specific elements (see Appendix A.2), including maintenance of post-development peak runoff rates at or below pre-development runoff rates for regulated development activities, and minimum technical criteria to control NPS pollution and localized flooding. Localities may reduce the one-acre threshold and may adopt criteria more stringent than the minimum requirements contained in the Regulations. Localities implement the program through the adoption of a local ordinance.

ISSUES: The Town is currently achieving stormwater volume management through the adoption of pertinent sections of the Fairfax County Public Facilities Manual. The Chesapeake Bay Preservation Chapter of the Town's Comprehensive Plan calls for the adoption of a Stormwater Management Ordinance. Funding for the Town to adopt a Stormwater Management Ordinance has been made available from the Virginia Coastal Resources Management Program through a grant obtained by the Northern Virginia Regional Commission.

III.2 TRIBUTARY STRATEGIES/CHESAPEAKE BAY 2000

OVERVIEW: By 1987, it had become apparent that in order to protect the health of the Chesapeake Bay, it would be necessary to further reduce the flow of nutrients and other harmful pollutants entering the Bay (previous efforts such as the Chesapeake Bay Preservation Act focus on a no-net-increase approach). As a result, the Chesapeake Bay Agreement was amended in that year to include a goal of reducing the flow of controllable nutrients (phosphorus and nitrogen) to the Bay by 40% by the year 2000. The State has taken the approach that participation in the program should be flexible in order to maximize benefits while minimizing costs.

In 1997, and after much negotiation, the General Assembly accepted the *Shenandoah and Potomac River Basins Tributary Nutrient Reduction Strategy*. In general, the Northern Virginia strategy calls for achieving nutrient reduction through:

- increased use and coverage of nonpoint source BMPs (through retrofit of existing land uses) for both agricultural and urban lands; and,
- retrofit of all wastewater treatment plants in the region, with a design capacity of 0.5 million gallons per day or greater, with year around biological nutrient removal (BNR) or equivalent technology.

Nearly 90% of the cost of achieving Northern Virginia's nutrient reduction goals comes from proposed retrofit of regional wastewater treatment facilities. The primary funding mechanism for Tributary Strategies is the Virginia Water Quality Improvement Fund created by the Virginia Water Quality Improvement Act of 1997. This fund will pay for up to 50% of the cost of nutrient reduction projects on a competitive basis.

On June 28, 2000, signatories of the Chesapeake Bay Agreement adopted "Chesapeake 2000 – A Watershed Partnership." The driving force behind this new Agreement is the fact that the Chesapeake Bay has been listed by the U.S. EPA as an impaired water under Clean Water Act Section 303(d) (see discussion under II.2.2). In order to avoid the implementation of a regulatory process for the Bay that would largely usurp the existing voluntary process, the Chesapeake Bay Executive Council committed to reducing nutrient, sediment, and chemical pollution to the Bay in an amount sufficient for the Chesapeake Bay to be de-listed. This effort will likely dwarf existing Tributary Strategy efforts to date and will need to occur within a very short time frame (2010). Strategies will include continued upgrades to wastewater treatment facilities, implementation of urban and agricultural BMPs, increased pollution prevention efforts, etc. Among the most difficult new strategies may be to consider large development above a certain threshold to be a "point source" rather than a "nonpoint source" of pollution. This would require an added level of scrutiny over impacts to water quality.

Other elements of the Agreement that could affect Herndon include provisions for states to work with local governments to:

- incorporate wetlands protection into local land use plans by 2010;
- restore 20,000 acres of wetlands in Virginia by 2010;
- incorporate stream corridor and forest corridor management into local land use plans by 2010;
- reduce sprawl through an investigation and modification of local tax policies;
- redevelop 1,500 brownfield sites by 2010; and,
- reduce the rate of conversion of forest and agriculture to urban land use by 30% by the year 2010.

ISSUES: While Herndon is not mandated to achieve any specific nutrient reductions since it does not own or operate a wastewater treatment facility, it may participate voluntarily through the Water Quality Improvement Fund grant program. Since the Town has identified the use of regional BMPs to improve water quality as an ongoing goal, the Town should take the

opportunity to apply for WQIF cost-share funds when applicable (i.e., the project results in a water quality benefit).

Currently, Virginia is embarking on a series of public processes to determine what needs to be accomplished, how much it will cost, and who will bear responsibility for meeting water quality goals by 2010.

III.3 CHESAPEAKE BAY PRESERVATION ORDINANCE

There are two voluntary stormwater management options that the Town should consider regarding its Chesapeake Bay Preservation Ordinance.

ELIMINATION OF OPT-OUT PROVISION: The Chesapeake Bay Preservation Chapter of the Town of Herndon Comprehensive Plan states "Strengthen the requirements to qualify for the Town's CBPO opt-out provision or eliminate the opt-out provision altogether to require the use of stormwater quality BMPs for all development." Section 78-1125 of the Town Code currently allows a property, or portions of a property, to be excluded from an RMA if the following can be demonstrated to the satisfaction of the Zoning Administrator.

(1) The RMA performance criteria are met in areas contiguous to and within 100 feet of the boundaries of the RPA; and
(2) The property is not characterized by any of the following: (a) floodplains; (b) wetlands; (c) highly erodible soils; or (d) steep slopes greater than 15%.

The issue is two fold: (1) because Herndon has long been built out, most properties can make a good case for opting-out of the RMA criteria; and, (2) because all urban development is hydrologically connected to the Town's surface waters via stormdrains, regardless of a site's "natural features," it no longer makes sense from a water quality standpoint to provide the opt-out. The Town needs to determine how Section 78-1125 needs to be modified or whether it should be deleted altogether.

INCORPORATION OF CIVIL PENALTIES: In 1998, the General Assembly amended the Act itself to specifically allow localities to incorporate provisions for civil penalties into local ordinances for violations in Chesapeake Bay Preservation Areas. This new power, which allows for a penalty of $1,000 per day per penalty up to $10,000, is contained in §10.1-2109.E of the Code of Virginia. This will allow the Town to speed enforcement of its Chesapeake Bay Preservation Ordinance provisions, especially with regard to projects on individual lots that have no long term interest in maintaining good relations with Town staff. The Town may wish to wait for the final revised Regulations to be promulgated, at which time the Town can make revisions to its own Ordinance accordingly.

MATRIX OF STORMWATER MANAGEMENT MANDATES AND OPTIONS

Program	Mandate/ Future Mandate/ Optional	Impact on Herndon	Issues	Status of Compliance
Clean Water Act Section (404) Wetlands/Virginia Water Protection (VWP) Permit	Wetland protection mandated.	Chesapeake Bay Preservation Ordinance requires developers to show evidence of all wetland permits.	Inadequate local mapping resources. Strictly a planning issue and not a compliance issue.	Fully compliant.
National Flood Insurance Act/Flood Disaster Protection Act	Mandated for Town residents to receive flood insurance.	Floodplain Overlay District of Zoning Ordinance.	Outdated FEMA floodplain maps (1979 version). Strictly a planning issue and ease of permitting issue. Not a compliance issue. Cited in Comprehensive Plan as needing to be updated.	Fully compliant.
Chesapeake Bay Preservation Act Phase 1 (Ordinance)	Mandated.	Chesapeake Bay Preservation Ordinance.	Potential amendments as a result of changes to State Regulations. Enforcing private BMP maintenance requirements is a compliance issue.	Program is fully compliant. Implementation of BMP maintenance agreements is likely to be a future compliance issue.
Chesapeake Bay Preservation Act Phase II (Comprehensive Plan)	Mandated.	Chesapeake Bay Preservation Chapter to the Herndon Comprehensive Plan.	None.	Fully compliant. Chesapeake Bay Local Assistance Board approved the Chapter on June 21, 1999.

MATRIX OF STORMWATER MANAGEMENT MANDATES AND OPTIONS

Program	Mandate/ Future Mandate/ Optional	Impact on Herndon	Issues	Status of Compliance
Chesapeake Bay Preservation Act Phase III (Ordinance Reconciliation and Enforcement)	Future mandated.	Further review and revisions to the Town's Erosion and Sediment Control Ordinance and Subdivision Ordinance. Establishment of region-wide reporting protocol.	Town needs to be able to track and justify waivers, exceptions, and exemptions for future reporting requirements.	Changes to the Town's program are likely for future consistency.
Virginia Erosion and Sediment Control Law	Mandated.	Erosion and Sediment Control Ordinance.	None.	Fully compliant.
Clean Water Act NPDES/VPDES Phase II Municipal Separate Storm Sewer System (MS4) Permit	Future mandated.	Will require the Town to meet the provisions of a "general permit" to control nonpoint source pollution. May include extended public outreach and education, enhanced monitoring and mapping of storm sewers, and implementation of more stringent post-development stormwater controls.	The Town will need to expand public education and outreach programs aimed at protecting water quality and develop a means of detecting and eliminating illicit discharges into Town stormdrains. Notice of Intent to comply with a general permit is due by 2003, with full compliance required by 2008.	Changes to the Town's program are likely for future consistency.

MATRIX OF STORMWATER MANAGEMENT MANDATES AND OPTIONS

Program	Mandate/ Future Mandate/ Optional	Impact on Herndon	Issues	Status of Compliance
Stormwater Management Regulations	Optional.	The Town may adopt a Stormwater Management Ordinance.	Ordinance would replace existing reference to Fairfax County Public Facilities Manual to control post-development stormwater volume and quantity. Issues include whether or not to include water quality criteria in the Town's SMO. Adoption of a SMO is a policy objective of the Comprehensive Plan.	Not applicable.
Tributary Strategies	Optional.	Voluntary reductions in nonpoint source pollution are encouraged. Any stormwater retrofit that reduces pollution from existing land uses is eligible for grant funding.	Funding may be available to help off-set the costs of implementing Town stormwater quality management projects.	Not applicable.
Chesapeake Bay Preservation Act – Civil Penalties	Optional.	Allows the Town to incorporate civil penalties into its Chesapeake Bay Preservation Ordinance.	Recently authorized by the General Assembly, the incorporation of civil penalties would add teeth to the Town's Ordinance.	Not applicable.

MATRIX OF STORMWATER MANAGEMENT MANDATES AND OPTIONS

Program	Mandate/ Future Mandate/ Optional	Impact on Herndon	Issues	Status of Compliance
Chesapeake Bay Preservation Ordinance – Elimination of Opt-Out Provisions	Optional.	Eliminates the ability of developers to "opt-out" of the requirements of the Town's Chesapeake Bay Preservation Ordinance.	The rationale for this step is outlined in the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan. The result would be a higher level of environmental protection at an incrementally higher cost for developers who would have otherwise been exempted from BMP requirements.	Not applicable.
Pro Rata Share Program	Optional.	Means of securing supplemental funding for stormwater management projects within the Town.	The Town's program needs to be updated in order to reflect current stormwater management needs and anticipated growth projections.	Required in order to continue to implement this optional funding program.
Stormwater Utility Fee Program	Optional.	Represents a powerful means of raising money for stormwater management.	Impacts residences and businesses in the form of a "charge" or "fee". Will be seen by many as a tax. This effort is in place in Prince William County but recently failed in Fairfax County.	Not applicable.

PART IV
STORMWATER MANAGEMENT FUNDING OPPORTUNITIES

State and federal stormwater management mandates are rarely accompanied by direct financial assistance for implementation. However, there are several means by which the Town can raise the necessary revenue to implement State and federal mandates as well as locally identified stormwater management projects and programs. Part IV describes the major means of generating revenue to implement stormwater management projects. These include:

- **Pro Rata Share**
- **Stormwater Utility**
- **Source Control Fund**
- **Grant Programs**

IV.1 PRO RATA SHARE

The Town has adopted a Pro Rata Share Program that is described in Part I.8. There is a stated need for updating this program to reflect current stormwater management needs, costs, and development conditions.

IV.2 STORMWATER UTILITY

The purpose of a stormwater utility (or stormwater tax/service charge) is to provide an ongoing source of revenue to offset the costs of stormwater management. Under §15.2-2114 of the Code of Virginia, income derived from these charges may be used to pay or recover costs for the following:

- The acquisition of real and personal property, and interest therein, necessary to construct, operate, and maintain stormwater control facilities;
- The cost of administration of such programs;
- Engineering and design, debt retirement, construction costs for new facilities, and enlargement or improvement of existing facilities;
- Facility maintenance;
- Monitoring of stormwater control devices;
- Pollution control and abatement, consistent with State and federal regulations for water pollution control and abatement; and,
- Planning, design, land acquisition, construction, operation, and maintenance activities.

Charges may be assessed to property owners or occupants, including condominium unit owners or tenants (when the tenant is the party to whom the water and sewer service is billed), and should be based upon their contributions to stormwater runoff. Waivers are mandated for the following categories.

- Federal, State, or local government agencies when the agency owns and provides for maintenance of storm drainage and stormwater control facilities or is a unit of the locality administering the program.
- Roads and public street rights-of-way that are owned or maintained by the State or local agencies.
- Any person who owns and provides for complete private maintenance of storm drainage and stormwater facilities, provided such person has obtained proper permitting.

Income from service charges may not exceed the actual costs incurred by a locality operating under the provisions of this title.

If a property does not contain stormwater control facilities, the contribution to runoff would be determined by impervious area alone. Under this method, those properties that generate increased runoff pay for the increased runoff. However, this method needs adjustments to account for the mitigating effects of facilities constructed to control stormwater runoff.

Fairfax County established a Stormwater Utility Advisory Group and hired Camp, Dresser, and McKee (CDM) to investigate the feasibility of establishing a stormwater utility for the County. While the core idea behind stormwater utility is fairly simple, (a flat fee based on imperviousness), the SUAG investigated three ancillary issues including:

(1) to what extent the owners or operators of privately maintained stormwater BMPs would be given a stormwater utility credit;
(2) whether the stormwater utility fee would be structured on a County-wide or a watershed basis; and,
(3) whether privately owned travelways would be deleted from the measurements of residential impervious areas.

On issue (1), the SUAG found that a maximum of 60% fee reduction would be allowed for any one site. This is based on a 30% maximum reduction for water quality facilities and a 30% maximum reduction for stormwater detention facilities that are designed and constructed in accordance with the County's Public Facilities Manual.

On issue (2), the SUAG found that it would be more equitable to base the stormwater utility fee structure on a watershed basis, although the administration of such a program would be more complicated. This is not so much of an issue in the Town, where there are only three watersheds – one of which only represents a fraction of the entire Town.

On issue (3), the SUAG found that it was only fair to delete privately owned travelways from the formulation of residential impervious areas since publicly owned travelways are exempted from the formulation under the law.

In 1997, Fairfax County tabled the idea of implementing a stormwater utility. Jurisdictions in Virginia that have implemented stormwater utility fee programs include Virginia Beach,

Chesapeake, Newport News, Norfolk, Hampton, and Prince William County. These programs are briefly outlined in the following table.

Jurisdiction	Residential Flat Rate $/mo./ERU	Maximum Stormwater Management Credit*	Fee Adjustments (% Reduction)
Virginia Beach	$2.74	50%	1-20% peak flow/ 10-30% WQ control
Chesapeake	$1.75	40%	20% peak flow/ 20% WQ control
Newport News	$2.30	25%	5-15% peak flow/ 5-15% WQ control/ 5-10% other
Norfolk	$4.50	60%	≤ 60% WQ control
Hampton	$2.50	25%	Under study.
Prince William Co.	$1.50	50%	10% peak flow/ 10% WQ control/ 10-30% participation in stormwater management program

** Most jurisdictions limit stormwater management credits to non-residential land uses.

ISSUES: If Fairfax County adopts a Stormwater Utility that is added to the personal property tax, the Town should be concerned whether the funds collected would remain in the County or be allocated to the Town. This is particularly relevant since the Town maintains its own stormwater infrastructure.

IV.3 SOURCE CONTROL FUND

This is not a very common way to raise revenue for stormwater management programs and the only example in Virginia is Arlington County. The Source Control Fund (SCF) is part of Arlington's Chesapeake Bay Preservation Ordinance (CBPO). Under the CBPO, developers are provided an option to contribute to the SCF in lieu of establishing an on-site BMP. Payments are in an amount of $0.25 per new impervious square foot above a 38% site imperviousness threshold (jurisdiction average). The $0.25 figure was determined in 1992 to represent the incremental cost of implementing quality management measures above and beyond that already required quantity management measures. The primary purpose of the SCF concept is to avoid the implementation of many small maintenance intensive BMPs that can drain private and public resources (and will probably not be maintained in the long run) and instead focus efforts in a more comprehensive fashion. For instance, eligible projects include the implementation of regional BMPs, public outreach and education, pollution prevention measures, street sweeping efforts, etc. Arlington's CBPO was approved by the Chesapeake Bay Local Assistance Board in 1993 after a year of conditional approval. Since 1992, the SCF has resulted in the collection of approximately $150,000.

Arlington County is currently undergoing a comprehensive review of its CBPO, including the Source Control Fund. Two primary concerns have been raised with regard to the SCF. First, there is concern that the per square foot SCF contribution is too low and that a process needs to be established to update the contribution. Second, because it is the developer's choice of whether to implement on-site BMPs or contribute to the SCF, many believe that the County has missed some opportunities where water quality protection could have been better served by an onsite BMP. The County is considering raising the contribution amount and providing staff with the authority to choose whether an on-site BMP would be more appropriate than a SCF contribution based on site-specific criteria.

IV.4 GRANT PROGRAMS

There are a number of federal and State grant programs that can help defray the costs of planning and implementing stormwater management programs. Although not an exhaustive listing, the following represent the most common sources of grant funding for stormwater management.

- CHESAPEAKE BAY LOCAL ASSISTANCE FUND
  Administrating Agency: Chesapeake Bay Local Assistance Department (State source)
  Match: None required, but definitely encouraged.
  Funds Available: $592,000 in FY99.
  Cycle: RFP in December, grant year from July 1 to June 30.
  Priorities: Local program development projects designed to achieve compliance with the Chesapeake Bay Preservation Act and local implementation projects. Comprehensive plan development, ordinance development and implementation, GIS (maximum $5,000).
  Contact Number: 1-800-CHE-SBAY

- VIRGINIA COASTAL RESOURCES MANAGEMENT FUND
  Administrating Agency: Department of Environmental Quality (NOAA source)
  Match: 50%.
  Funds Available: $660,000 in FY99.
  Cycle: RFP in March, grant year from October 1 to September 30.
  Priorities: Watershed management and planing, including incorporation of Stormwater Management Regulations, nutrient reduction, erosion and sediment control, air quality, toxics assessment; habitat protection including fish habitat, dune protection, wetlands, riparian buffers, and land acquisition; and managing the impacts of development (including GIS and initiatives to reduce sprawl).
  Contact Number: 1-804-698-4320

- VIRGINIA WATER QUALITY IMPROVEMENT FUND
  Administrating Agency: DEQ/Department of Conservation & Recreation (State source)
  Match: 50%.
  Funds Available: Variable ($2.5 million for NPS in FY98).
  Cycle: RFP and grant year still variable.
  Priorities: Any projects that are clearly demonstrated as likely to achieve reductions in NPS pollution. Projects include but are not limited to the acquisition of

conservation easements, conservation planning and design assistance for agricultural operations, implementation of urban retrofit, and reimbursement to local governments for tax credits and other tax relief that provides incentive to water quality improvement.

Contact Number: 1-804-371-8984

- WATERSHED RESTORATION GRANTS (CWA SECTION 319)

  Administrating Agency: Department of Conservation & Recreation (EPA source)

  Match: 40% from grantee.

  Funds Available: Between $400,000 and $1,000,000 in FY99.

  Cycle: RFP for pre-proposals in June.

  Priorities: Eligible activities include programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. Preference is given to "on-the-ground" activities that address a cause of the identified water quality problem. Planning activities and other developmental activities not directly related to implementation are not eligible.

  Contact Number: 1-804-786-1712

- WATER QUALITY MANAGEMENT PLANNING (CWA SECTION 604(b))

  Administrating Agency: DEQ (EPA source)

  Match: 25% from grantee.

  Funds Available: Variable.

  Cycle: RFPs in December. Grant year October 1 through September 30.

  Priorities: Funds are available to conduct water quality monitoring, develop, revise, and review water quality standards, develop lists of impaired waters, and develop continuing planning processes. Projects should focus on watershed protection issues.

  Contact Number: 1-804-698-4299

- FLOOD PREVENTION PROTECTION FUND

  Administrating Agency: Department of Conservation and Recreation (State source)

  Match: 50% match.

  Funds Available: Variable.

  Cycle: Grant year July 1 through June 30.

  Priorities: Projects can include floodplain studies and mapping, structural protection and buyouts, relocation, and floodproofing and/or elevation of structures repeatedly damaged by flooding.

  Contact Number: 1-804-786-1712

- SMALL WATERSHED GRANTS PROGRAM

  Administrating Agency: National Fish and Wildlife Foundation (via Chesapeake Bay Program)

  Match: 50% from grantee.

  Funds Available: $350,000 in FY99.

  Cycle: RFP in January. Grant year July 1 through June 30.

Priorities: Funds are available to implement Tributary Strategies and other community watershed initiatives.
Contact Number: 1-410-377-6270

- VIRGINIA ENVIRONMENTAL ENDOWMENT
  Administrating Agency: Virginia Environmental Endowment
  Match: 50% from grantee.
  Funds Available: Variable.
  Cycle: Application deadlines are April 15, August 15, and December 15.
  Priorities: Funds are used to support community action, reinforced by research and education in the areas of sustainable communities and water quality protection and management.
  Contact Number: 1-804-644-5000

- CHESAPEAKE BAY RESTORATION FUND
  Administrating Agency: Chesapeake Bay Restoration Fund Advisory Committee
  Match: Variable % from grantee.
  Funds Available: Variable.
  Cycle: RFPs in December. Grant year October 1 through September 30.
  Priorities: Funds available for public education and outreach programs as well as conservation and restoration projects.
  Contact Number: 1-804-786-3591

MATRIX OF STORMWATER MANAGEMENT GRANT FUNDING OPPORTUNITIES

Grant Name and Sponsoring Organization	Purpose of Fund	Match Required	Funding Cycle	Contact Number
Chesapeake Bay Local Assistance Fund Chesapeake Bay Local Assistance Department	Local program development projects designed to achieve compliance with the Chesapeake Bay Preservation Act and local implementation projects. Comprehensive plan development, ordinance development, and GIS implementation.	None required, but strongly encouraged.	RFP in December, grant year July 1 to June 30.	1-800-CHE-SBAY
Virginia Coastal Resources Management Fund Virginia Coastal Program, Department of Environmental Quality	Watershed management and planning (include. nutrient reduction, erosion and sediment control, air quality, toxics assessments), habitat protection (include. fish habitat, wetlands, riparian buffers, and land acquisition), and managing the impacts of development.	50%	RFP in March, grant year from October 1 to September 30.	1-804-698-4320
Virginia Water Quality Improvement Fund Department of Conservation and Recreation	Any projects that are clearly demonstrated as likely to achieve reductions in nonpoint source pollution. Projects include the acquisition of conservation easements, implementation of urban retrofits, and reimbursement for tax credits and other tax relief that provides incentives to water quality improvement.	50%	RFP and grant cycle still variable.	1-804-371-8984
Watershed Restoration Grants – Section 319 Department of Conservation and Recreation (EPA Source)	Activities include programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. Preference is given to on-the-ground activities that address a cause of an identified water quality problem. Planning activities not directly related to implementation are not eligible.	40% from grantee.	RFP for pre-proposals in late June.	1-804-786-1712

MATRIX OF STORMWATER MANAGEMENT GRANT FUNDING OPPORTUNITIES

Grant Name and Sponsoring Organization	Purpose of Fund	Match Required	Funding Cycle	Contact Number
Water Quality Management Planning Grants – Section 604b Department of Environmental Quality (EPA Source)	Funds available to conduct water quality monitoring, develop, revise, and review water quality standards, develop lists of impaired waters, and develop continuing planning processes. Projects should focus on watershed protection issues.	25% from grantee.	RFPs in December. Grant year from October 1 through September 30.	1-804-698-4299
Flood Prevention Protection Fund Department of Conservation and Recreation	Projects can include floodplain studies and mapping, structural protection and buyouts, relocation, and floodproofing and/or elevation of structures repeatedly damaged by flooding.	50%	July 1 through June 30.	1-804-786-1712
Small Watershed Grants Program Center for Chesapeake Communities	Funds are available to implement Tributary Strategies and other community watershed initiatives.	50%	RFP in January. Grant year July 1 though June 30.	1-410-377-6270
Virginia Environmental Endowment Grants Virginia Environmental Endowment	Funds are used to support community action, reinforced by research and education in areas of sustainable communities and water quality protection and management.	50%	Application deadlines are April 15, August 15, and December 15.	1-804-644-5000
Chesapeake Bay Restoration Fund Chesapeake Bay Restoration Fund Advisory Committee (Virginia)	Public education and outreach programs.	Variable % from grantee.	Variable.	1-804-786-3591

PART V
ANALYSIS AND RECOMMENDATIONS FOR ACTION

The following are recommendations for action based on an analysis of issues raised in Parts I through IV. In addition to recommendations for action, which primarily address those required for consistency with State and federal mandates, this section outlines suggestions for strengthening the Town's stormwater management program.

V.1 CLEAN WATER ACT

V.1.1 Section (404) Wetlands/Virginia Water Protection Permit

ANALYSIS: A general location map and a description of major wetlands associated with the Sugarland Run and Folly Lick Branch mainstems is provided in the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan. This inventory was performed via field survey in 1998 by the Town Community Forester in order to update information contained in the U.S. Fish and Wildlife Service's National Wetlands Inventory map. The Town's Chesapeake Bay Preservation Ordinance requires the delineation of specific wetland areas by a developer during the site development process.

RECOMMENDATION: None.

SUGGESTION: Perform a field survey of additional wetland areas located within the Town but not associated with the Sugarland Run and Folly Lick Branch mainstems.

V.1.2 NPDES/VPDES Phase II MS4 Permit

ANALYSIS: The future requirement for the Town to obtain a NPDES Phase II MS4 permit will result in the need for additional actions on the part of the Town to protect water quality. While the Town will not need to apply for a permit until 2003, with implementation required within 5 years after that date, there are several actions that the Town can take now to make future implementation easier.

In particular, the Town will need to invest more heavily in public education and outreach programs. The Town's most notable pollutant of concern, based on water quality monitoring performed by the Fairfax County Health Department, is fecal coliform bacteria. The primary likely causes of this pollutant are pet waste, human waste from sanitary sewer lines, and/or an overpopulation of wild life. However, other pollutants of concern include leakage from automobiles (brake fluid, oil, etc.), used oil dumping, nutrients from fertilizers, pesticides, and sediments from land disturbing activities. The Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan outlines a number of specific actions for implementing public education and outreach programs.

Secondly, the Town's efforts to monitor its storm sewer system will need to be strengthened and additional mapping will be necessary for flow modeling and analysis. Currently, the Town performs a physical inspection of the stormdrain inlets (not actual piping) twice a year but does not have a means of checking for illicit discharges into the system. The most common means of checking for these illicit discharges is to establish a dry weather monitoring regimen. Other Northern Virginia localities have established time schedules for screening outfalls and sampling discharges for a range of common urban pollutants.

RECOMMENDATION: Incorporate sanitary sewer lines and minor storm sewer outfalls into the Town's GIS. The Northern Virginia Regional Commission, under contract to the Town, has produced a GIS layer depicting major storm sewer lines and outfalls. The Town will eventually be required to map all outfalls for monitoring purposes and should consider applying for a grant from the Chesapeake Bay Local Assistance Department or Department of Environmental Quality to help offset the costs of the GIS layers and the purchase of necessary equipment (such as a global positioning system, or GPS).

RECOMMENDATION: Develop a dry weather outfall monitoring program to detect illicit discharges to the storm sewer network.

SUGGESTION: Implement a Town-wide storm drain stenciling or labeling program and develop public education materials to be distributed prior to actual labeling. Obtain pre-labeling education materials for adaptation by the Town from the Northern Virginia Regional Commission and the Northern Virginia Soil and Water Conservation District. Apply for funding from the Virginia Environmental Endowment, the Chesapeake Bay Restoration Fund, and/or the Chesapeake Local Assistance Fund.

SUGGESTION: Develop a public education brochure on the Town's dog waste disposal regulations and provide a number on the brochure for people to contact should they see a violation taking place. ArlingtonDogs, Fairfax County, the City of Alexandria, and Seattle, Washington, have all developed public education materials that could be adapted by the Town.

SUGGESTION: Implement an annual or semi-annual Town Household Hazardous Materials Drop-Off and Collection Day for homeowners in accordance with the action statements contained in the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan. Distribute information from Fairfax County Household Hazardous Waste Program informing Town residents where they can take hazardous materials on a year-around basis (West Ox Road/I-66 Transfer Station).

SUGGESTION: Implement a permanent, Town sponsored used oil, filters, and antifreeze recycling program. Potential legislation in 2001 by the General Assembly may make funding available for this action. If State funding is not available, the cost for basic collection infrastructure is likely to be in the $3,000 to $5,000 range. Collection costs range from $0.15 to $0.30 per gallon of used oil and antifreeze and $0.25 to $0.33 per used oil filter.

SUGGESTION: Develop a placard, to be placed at all points of sale for oil and antifreeze, alerting the consumer of the need to recycle and providing the names and locations of the Town's used oil and antifreeze recycling centers. This is required (but rarely enforced) under the Code of Virginia §10.1-1422.5. The Department of Environmental Quality has sample placards available upon request. This step is necessary to address the day-to-day hazardous material recycling needs (primarily used oil and antifreeze) of Town residents. Free advertising for businesses that participate in recycling efforts may also help to increase business participation. As with funding for collection centers, the Town should watch to see of the 2001 General Assembly results in a State-wide approach to used oil and antifreeze management.

V.2 CHESAPEAKE BAY PRESERVATION ACT

V.2.1 Phase I (Chesapeake Bay Preservation Ordinance)

ANALYSIS: A number of factors will require changes to the Town's Chesapeake Bay Preservation Ordinance. First, the Chesapeake Bay Local Assistance Board is currently in the process of making revisions to the Chesapeake Bay Preservation Area Designation and Management Regulations. Some of these changes are administrative in nature; however, others make clarifications or changes to the intention of the Regulations. It is unclear at this point what the actual affects will be on the Town, though it is likely that the Chesapeake Bay Local Assistance Department will provide guidance on how the newly revised Regulations will affect localities. Depending on the nature of these changes, the Town will likely be required to make revisions to its Ordinance.

Second, the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan calls for tightening or eliminating the provision of the Ordinance which allows for opting out of the RMA. The rationale for changing this provision of the Ordinance is that all development in the Town is connected to surface waters via stormdrains – and therefore, controlling nonpoint source pollution in these areas is not simply a matter of protecting or managing on-site natural resources. As a result, it makes sense from an environmental and an administrative standpoint to eliminate the opt-out provision.

Third, the 1998 General Assembly added language to the Chesapeake Bay Preservation Act allowing for the imposition of civil penalties for violations of local Chesapeake Bay Preservation Ordinances. Incorporating this language into Herndon's Ordinance will provide for increased enforcement leverage on the part of the Town.

Finally, in some instances, where an on-site BMP would normally be required, a developer may apply for a waiver under Section 78-1131-(d) of the Town's Chesapeake Bay Preservation Ordinance. Under the Town's Ordinance, when such a waiver is granted, there is no requirement for a monetary contribution in lieu of on-site BMPs to assist with implementation of the Town's overall stormwater management program. While this is also the case in Fairfax County – Prince William County provides for a

waiver of BMP requirements only with an accompanying contribution equivalent to what would have been made if on-site BMPs had been required. Arlington County provides an option for payment into a Source Control Fund, thereby making applications for a waiver extremely rare. Similarly, the City of Williamsburg has a provision that allows a developer to purchase the development rights of an undeveloped property as a means of meeting the requirements of their Ordinance. There are also instances when the Town may feel that an on-site BMP is not the most appropriate option from an environmental or a public health point of view.

However, the Town's Ordinance contains no provision for waiving only BMP requirements or for collecting a monetary contribution in substitute when on-site BMP requirements are waived. The Chesapeake Bay Local Assistance Department does not have objections to this course of action so long as "equivalency," in the form of a regional water quality management plan, is demonstrated. Language should be added to the Town's Ordinance that allows for the payment of a fee-in-lieu of on-site BMP requirements for use in water quality-equivalent activities. The Chesapeake Bay Local Assistance Department has indicated that it will want to review the arrangement, to ensure that there is no dramatic increase in waivers at the expense of requiring appropriate on-site controls. However, in practice, CBLAD has no objections to this arrangement and believes that it is supportable under current enabling legislation.

SUGGESTION: The timing of the following changes to the Chesapeake Bay Preservation Ordinance should be coordinated in a fashion which allows for a single set of Ordinance amendments. Practically, this means that amendments should be made after the Chesapeake Bay Local Assistance Board has promulgated the new Chesapeake Bay Preservation Area Designation and Management Regulations – expected to occur in late 2000.

SUGGESTION: Incorporate civil penalties into the Town's Chesapeake Bay Preservation Ordinance as is allowed now under §10.1-2109.E of the Code of Virginia.

SUGGESTION: Eliminate the provision of the Town's Chesapeake Bay Preservation Ordinance (§78-1125-2b) which allows for opting out of RMAs.

SUGGESTION: Add language to Section 78-1128-(2) of the Town's Ordinance which allows for the payment of a fee-in-lieu of on-site implementation of a stormwater BMP that may be accrued for the implementation of strategic regional or multi-site facilities, or the purchase of development rights, if on-site BMPs are not desirable. For instance: "The requirements of Section 78-1128-(2)-a, b, and c may be waived or modified for a property if the Director of the Department of Public Works determines that the provision of on-site BMPs is not practical or desirable due to constraints imposed by the dimension of the property, if the public interest is diminished by the requirement of on-site BMPs, or if a more cost-effective approach to improving water quality than the implementation of an on-site BMP has been identified." "A monetary contribution, in the amount of $X per square foot of impervious surface above the average watershed conditions for development and above 90% of the existing impervious cover for redevelopment, shall be

substituted when on-site BMPs are waived." Arlington County has computed a monetary contribution of $0.25 per square foot of impervious surface. Arlington County is in the process of revising these figures. Herndon would need to follow Arlington County's methodology for computing a per square foot cost equivalent for on-site BMPs.

SUGGESTION: Eventually, as the Town adopts a Stormwater Management Ordinance, Section 78-1128-(2)-a and c of the Town's Chesapeake Bay Preservation Ordinance should be deleted for reference to the SMO. (See discussion under V.5.)

V.2.2 Phase II (Comprehensive Plan)

ANALYSIS: The Town adopted the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan on May 26, 1998 under a grant from the Chesapeake Bay Local Assistance Department and with the assistance of the Northern Virginia Planning District Commission, (now the Northern Virginia Regional Commission). The Chesapeake Bay Local Assistance Board certified the Chapter on June 21, 1999, and the Town is in compliance with Section 10.1-2109.B of the Chesapeake Bay Preservation Act.

RECOMMENDATION: Implement Section VI "Strategies and Action Statements" of the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan in accordance with Section VII "Implementation Plan and Time Line."

V.2.3 Phase III (Ordinance Reconciliation and Enforcement)

ANALYSIS: The Chesapeake Bay Local Assistance Department, with the establishment of an Enforcement Review Officer, is in the beginning stages of Phase III Bay Act implementation. So long as the Town continues to implement its Chesapeake Bay Preservation Ordinance and begins to implement its newly adopted Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan, there are no outstanding *issues* which the Town should be concerned with.

However, there are two administrative issues and one enforcement issue that need to be addressed by the Town. The first administrative issue is that the Town will need to implement a system for easily tracking variances and waivers to the Chesapeake Bay Preservation Ordinance. CBLAD has indicated that they will eventually move towards a yearly reporting requirement in order to ensure some level of uniformity with Ordinance enforcement across jurisdictional lines. The second administrative issue is that while the Town has been working with the Department of Conservation and Recreation to ensure that its other environmental and land use ordinances are mutually supportive, the Town will eventually need to demonstrate to CBLAD that Chesapeake Bay protection has been integrated with its Zoning and Subdivision ordinances. As a first step, the Town should submit these ordinances to CBLAD for a preliminary review.

The one enforcement issue revolves around the maintenance of privately owned and operated BMPs built within the Town. While the Town maintains its public BMPs

(including those within single family subdivisions), there has been little tracking of maintenance of other private BMPs. Frequent inspection of these facilities could be expensive and should be unnecessary since owners and operators are required to maintain these BMPs. The Chesapeake Bay Preservation Chapter to the Comprehensive Plan includes the action statement "Continue to require and enforce a strong maintenance program for public and private BMPs to ensure the long-term effectiveness of these facilities."

RECOMMENDATION: Implement a system of tracking variances and waivers (and requests for variances and waivers) to the Chesapeake Bay Preservation Ordinance.

RECOMMENDATION: Submit Subdivision Ordinance and Zoning Ordinance to Chesapeake Bay Local Assistance Department for preliminary review.

RECOMMENDATION: BMP maintenance aspects of the Town's program should be addressed by incorporating a policy that requires the owner of a private facility to provide annual inspections by a certified professional engineer and to provide a report to the Town which addresses the maintenance needs of the facility in accordance with the inspection. The Town's BMP maintenance agreement template will need to be changed to require annual inspections.

V.3 VIRGINIA EROSION AND SEDIMENT CONTROL LAW

ANALYSIS: The Town has adopted an Erosion and Sediment Control Ordinance pursuant to the Virginia Erosion and Sediment Control Law and is in conformance with criteria established by the Virginia Division of Soil and Water Conservation.

RECOMMENDATION: None.

V.4 FLOODPLAIN ORDINANCE

ANALYSIS: The Town's Floodplain District of the Town's Zoning Ordinance is consistent with the requirements of the Federal Emergency Management Agency. The primary concern with the Town's program is that the official map (1979) is out-of-date. Numerous changes to the floodplain designation have been granted by FEMA and the Town Council based on more detailed, development-specific hydrologic studies. In these cases, Letters of Map Revision (LOMRs) are submitted to FEMA for technical review and incorporation by reference. While the criteria of what designates a floodplain in the Town's Zoning Ordinance ensures that Town floodplains are protected, the Town floodplain map is no longer a useful planning and screening tool for developers and citizens.

SUGGESTION: The Town should submit its floodplain map, along with pertinent LOMRs and reasons why the Town's floodplains have changed (i.e., Herndon Parkway, Fairfax County Parkway, and development) to FEMA's Region III office. FEMA is currently undergoing a comprehensive five year assessment of floodplain mapping needs,

and Herndon must submit its request in order to be considered. An option, which would come partially at the Town's expense, would be to apply for a 50% cost-share grant to the Department of Conservation and Recreation's Flood Prevention Protection Fund. It is recommended that the Town submit its map to FEMA for review to see if an update can be achieved gratis. If this does not turn out to be the case, and the Town decides to pursue grant funding, it should wait for completion of the Fairfax County Parkway in order to accommodate any changes to the Sugarland Run floodplain.

V.5 STORMWATER MANAGEMENT ACT

ANALYSIS: The Town, by resolution, currently requires developers to comply with the stormwater volume management performance standards outlined in the Fairfax County Public Facilities Manual. The Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan calls for the Town to "Adopt and implement a Stormwater Management Ordinance that will comprehensively regulate stormwater volume in addition to stormwater quality." The benefit of adopting a stand-alone Stormwater Management Ordinance is that it places all the Town's stormwater management ordinances (Erosion and Sediment Control, stormwater volume management, and Chesapeake Bay Preservation Ordinance) under one umbrella; therefore making administration and interpretation of the Town's ordinances easier. The Department of Conservation and Recreation is available for technical assistance to the Town and grant funding has been made available in the past for program implementation through the Virginia Coastal Program. Adoption of a SMO is voluntary although encouraged.

There are a number of different options that the Town may consider during the drafting of a SMO. These options are better discussed during the drafting stages, rather than outlined in this report.

SUGGESTION: Adopt a Stormwater Management Ordinance with technical assistance from the Department of Conservation and Recreation and grant funding obtained by NVPDC trough the Virginia Coastal Program.

V.6 TRIBUTARY STRATEGIES/CHESAPEAKE BAY 2000

ANALYSIS: Although the Shenandoah and Potomac River Basins Tributary Nutrient Reduction Strategy provides goals and guidelines for achieving the region's nutrient pollution reduction goals, the Town of Herndon is not held to any specific reduction. Rather, it is the desire of the State for all localities to identify opportunities to achieve nutrient reductions through the retrofit of already developed areas with BMPs. In instances where measurable nutrient reductions can be calculated, localities are eligible for 50% match funds from the Virginia Water Quality Improvement Fund.

SUGGESTION: During the recommended update of the Town's Pro Rata Share Program (discussed in V.7), identify all projects that would qualify for Water Quality Improvement Funds and apply for grant funding on an annual basis for these projects as they are implemented.

V.7 PRO RATA SHARE PROGRAM

ANALYSIS: The Town's Pro Rata Share Program should in many ways serve as a funding mechanism that brings together all recommendations and suggestions requiring capital construction. For instance, projects should be considered with the nutrient reduction goals of Tributary Strategies and future NPDES requirements in mind in addition to meeting and exceeding Chesapeake Bay Preservation Act and Stormwater Management Act requirements.

However, the Town's Pro Rata Share Program, adopted in 1973, is in need of being updated and there is no overall plan of projects that are eligible for funding. Contract #98-2 (Task Order #1 and #2) initiated with the Northern Virginia Planning District Commission, (now the Northern Virginia Regional Commission), in March, 1998, is intended to lay the foundation for revising and updating the Town's Pro Rata Share Program by collecting and digitizing information on the Town's stormwater infrastructure including (1) streams/major drainage, (2) watersheds and subwatersheds, (3) major stormwater outfalls, and (4) location of existing and proposed stormwater management BMP facilities, with attributes.

The Town has also expressed a desire to make greater utility of stormwater management facilities other than standard dry ponds as part of its Pro Rata Share Program and other stormwater management initiatives. Dry ponds are often favored because of standardized engineering and pollutant removal calculations. Because of the Town's reliance on the Fairfax County Public Facilities Manual for BMP design criteria, developers do not have much incentive to utilize newer BMPs such as biofiltration.

RECOMMENDATION: Continue to move forward with updating the Town's Pro Rata Share Program. The sequence required for the update includes:

- identification and location of potential stormwater management projects;
- identification and quantification of engineering and land costs associated with projects selected for funding; and,
- modification of Pro Rata Share funding structure and establishment of process for updating program costs.

SUGGESTION: The Town should work with Fairfax County and the Northern Virginia Regional Commission to incorporate additional BMPs into the regional Northern Virginia BMP Handbook. If that it not possible, the Town could consider developing or adopting its own design standards for innovative BMPs.

V.8 STORMWATER UTILITY FEE PROGRAM

ANALYSIS: Six Virginia local governments have successfully adopted stormwater utilities, including Prince William County. However, the proposed adoption of a stormwater utility in Fairfax County was recently tabled for the near future. Although the Town has the authority to implement its own stormwater utility, it is recommended that the Town wait until that time when Fairfax County adopts a utility, in which case the Town should model its own program after.

RECOMMENDATION: No action at this time.

SUGGESTION: Work with Fairfax County to ensure that if a Stormwater Utility Fee is proposed to be part of the property tax bill, that funds collected from Town residents are returned for use on Town-sponsored projects and programs.

V.9 OVERALL PLANNING FOR STORMWATER MANAGEMENT

ANALYSIS: Several mechanisms are recommended for funding projects and programs to meet Herndon's stormwater management needs (including capital projects such as regional BMPs and outreach projects aimed at reducing pollution). Specifically, the Pro Rata Share Program and a proposed "fee-in-lieu of BMPs" fund require Herndon to identify projects and to arrive at costs for implementing such projects. It would make sense for Herndon to develop a consolidated project planning document that contained all potential projects and for Herndon to develop a short list of criteria for funding projects on in the planning document. This would include a distinction between projects that could be funded through the Pro Rata Share program and those projects that could be funded through fee-in-lieu of payments, grants, etc.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Perform a field survey of additional wetland areas located within the Town but not associated with the Sugarland Run and Folly Lick Branch mainstems.	Town planning purposes.	No.	Department of Community Development.	One day of staff time.	Town.
Incorporate sanitary and stormsewer lines into the Town's GIS.	Allows for flow modeling and mapping of stormdrains in preparation for future VPDES Phase II MS4 nonpoint source pollution control requirements.	Yes. Future VPDES Phase II MS4 requirements.	Department of Public Works.	$5,000 to $10,000 based on similar work performed by the Northern Virginia Regional Commission for the Town of Vienna.	Apply for grant from the Chesapeake By Local Assistance Department ($5,000 max. for GIS projects). Some match (variable %) required by the Town.
Implement a Town-wide stormdrain stenciling or labeling program and develop public education materials for pre-labeling distribution.	To reduce the incidence of dumping used oil, pet waste, and other materials down stormdrains through public education.	No; however, the Town will need to improve public education and outreach as part of future VPDES Phase II MS4 requirements.	Department of Community Development and Department of Public Works	$6,580 to label each of the Town's 1,293 drainage structures (Town estimate). $496 for printing costs to distribute public education materials to 5,786 households. Does not include staff time. Volunteer time will be required.	Apply for grants from the Virginia Environmental Endowment, the Chesapeake Bay Restoration Fund, and/or the Chesapeake Bay Local Assistance Fund. Potential for business/non-profit sponsorship of education materials.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Develop a public education brochure on the Town's dog waste disposal regulations.	To reduce the incidence of fecal coliform pollution in Town streams caused by improper disposal of pet waste.	No; however, the Town will need to improve public education and outreach as part of future VPDES Phase II MS4 requirements.	Department of Community Development.	Templates exist from neighboring jurisdictions, limiting staff time. Costs depend on amount printed.	Town.
Initiate an annual Household Hazardous Materials Drop-Off and Collection Day for homeowners. Distribute information to Town residents on Fairfax County's Hazardous Household Waste Program.	To reduce the incidence of improper disposal of hazardous wastes by providing an alternative to dumping. To increase awareness and use of the County's program.	No; however, the Town will need to improve public education and outreach as part of future VPDES Phase II MS4 requirements.	Department of Public Works.	Disposal at Fairfax County's I-66 Transfer Station is free. Coordination must be made in advance with the Fairfax County Household Hazardous Waste Program (803-9614). Means of advertising program to be determined. Printing costs not to exceed $496 for 5,786 households. Staff time and use of Town vehicles for collection and transport not included.	Town. See Appendix B for more information.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Implement a permanent Town used oil, filters, and antifreeze collection and recycling program.	To provide a means for disposing of common materials that may otherwise enter a storm drain. Needed due to declining participation by private entities.	No; however, the Town will need to improve public education and outreach as part of future VPDES Phase II MS4 requirements.	Department of Public Works.	The State is considering a program to fund local government efforts of this nature. If funding is not available, it is anticipated that set up costs, exclusive of collection and staff costs, will be in the range of $3,000 to $5,000.	State grant or Town.
Develop a placard, to be placed at all points of sale for oil and antifreeze, alerting the public about the need to recycle these materials and advertising local businesses participating in a recycling program.	To increase awareness of the hazard of not recycling used oil and antifreeze. To increase business participation in used oil recycling.	No; however, the Town will need to improve public education and outreach as part of future VPDES Phase II MS4 requirements.	Department of Community Development.	Cost of placards. Staff time associated with compiling and maintaining a list of businesses selling oil and antifreeze.	Town.
Incorporate civil penalties into the Town's Chesapeake Bay Preservation Ordinance.	To provide the Town with a meaningful and timely way to enforce its Ordinance.	No.	Department of Community Development.	Staff time.	Town.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Eliminate the provision of the Town's Chesapeake Bay Preservation Ordinance, which allows for opting out of RMAs.	To improve Town-wide water quality management and protection.	No; however, cited as an action statement in the Comprehensive Plan.	Department of Community Development.	None to the Town. Marginal cost to the developers (approx. 15% over cost to implement required stormwater volume control) *if* the Town also implements a fee-in-lieu of on-site BMPs for small sites.	Town
Incorporate language in the Town's Chesapeake Bay Preservation Ordinance allowing for the payment of a fee-in-lieu of on-site implementation of stormwater BMPs under certain scenarios.	To eliminate the use of the waivers as a means of escaping water quality protection requirements. To provide the Town with a means of flexibility when on-site implementation is not desirable.	No.	Department of Public Works.	Revenue neutral and revenue generating.	Town.
Implement Section VI "Strategies and Action Statements" of the Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan.	To protect and restore water resources of the Town and to meet obligations of the Chesapeake Bay Preservation Act.	Yes; in order to comply with Phase II requirements of the Chesapeake Bay Preservation Act.	Department of Community Development and Department of Public Works	Various (see Section VII of the Chapter)	Town.
Implement a system of tracking variances and waivers to the Chesapeake Bay Preservation Ordinance.	To ease future compliance with Phase III enforcement of Chesapeake Bay Preservation Act.	No; however, these measures will make future compliance easier.	Department of Community Development.	Staff time.	Town.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Submit Subdivision Ordinance and Zoning Ordinance to Chesapeake Bay Local Assistance Department for preliminary review.	To ensure that these ordinances are mutually supportive of the Chesapeake Bay Preservation Ordinance. Phase III Chesapeake Bay Preservation Act compliance.	Yes; in order to comply with Phase III requirements of the Chesapeake Bay Preservation Act.	Department of Community Development.	Staff time.	Town.
Incorporate a policy that requires the owners of private BMP facilities to provide annual inspections by a certified professional engineer and to provide a report to the Town which addresses the maintenance needs of the facility in accordance with the inspection.	To ensure adequate maintenance of private BMP facilities.	Yes; in order to effectively implement the Town's Chesapeake Bay Preservation Ordinance.	Department of Public Works.	Staff time to revise maintenance agreement forms. Staff time to process inspection reports. More cost effective than having Town staff perform inspections.	Town.
Submit Town's FEMA floodplain map and LOMRs to FEMA's Region III office for remapping consideration.	To ensure that the Town's FEMA floodplain map is a useful resource and to reflect changes in the map caused by development.	No; however, cited as an action statement in the Comprehensive Plan.	Department of Public Works.	Staff time to compile LOMRs and to submit application.	Town.
Adopt a Stormwater Management Ordinance.	To more comprehensively manage stormwater runoff in the Town and to streamline the Town's regulatory process.	No; however, cited as an action statement in the Comprehensive Plan.	Department of Public Works and Department of Community Development.	Staff time to work with NVRC to develop ordinance.	The Northern Virginia Regional Commission has obtained a grant from the Virginia Coastal Program to develop an SMO for the Town.

MATRIX OF RECOMMENDATIONS FOR ACTION

Recommendation/ Suggestion	Purpose	Required for Compliance	Responsibility	Estimated Cost	Funding Source
Identify projects in the Town's Pro Rata Share program for potential funding through State Water Quality Improvement Funds.	To provide a funding supplement to implement eligible stormwater management projects.	No.	Department of Public Works.	Revenue generating.	Town.
Continue to move forward with an update to the Town's Pro Rata Share Program.	To update the Town's program to reflect current stormwater management needs and future build out conditions.	Yes; if the Town wishes to continue to use this funding source.	Department of Public Works.	Revenue generating in long run.	Town.
Consider implementation of Stormwater Utility Fee Program if Fairfax County adopts such a program.	To provide an ongoing source of revenue for Town stormwater management needs.	No.	Department of Public Works.	Revenue generating. Costs associated with program set-up.	Town.

APPENDIX A
RELEVANT FEDERAL AND STATE STORMWATER MANAGEMENT REGULATIONS

Appendix A provides an overview of all major federal and State stormwater management regulations and programs which either directly or indirectly affect the Town. Part I of the main report examines in depth those regulations which impose existing or future mandates on the Town.

A.1 FEDERAL REGULATIONS

Most federal mandates, regulations, and programs affect the Town indirectly by requiring Virginia to adopt and implement minimum water quality and quantity regulatory requirements. As a result, almost all mandates affecting the Town can be traced to federal legislation and regulations. Since many of Virginia's programs simply implement federal regulations and programs by reference, it is useful to look at the originating federal source of these mandates. Federal requirements and programs covered in this section include:

- **Clean Water Act**
- **National Flood Insurance Act and Flood Disaster Protection Act**
- **Chesapeake Bay Agreement**

CLEAN WATER ACT

Impacts on Herndon

- National Pollution Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) Permit (Future Town)
- NPDES Industrial/Wastewater Treatment Discharge Permits (Current Private Sector and Blue Plains Wastewater Treatment Facility)
- Water Quality Standards, Reporting, and Swimmable and Fishable Water Quality Goals (Current Virginia Department of Environmental Quality and Department of Conservation and Recreation)
- Wetlands Protection under Virginia Department of Environmental Quality Water Protection Permit (Current Development Community)

The Clean Water Act (CWA), U.S.C. §1251 *et seq*., is the federal government's primary water quality protection tool. Under the CWA, the U.S. EPA and its partners are responsible for ensuring that the nation's pristine rivers, lakes, and estuaries remain unpolluted and for working to clean up already polluted water bodies. Major sections of the CWA that have impacts on the State and local levels include the following.

- REPORTING (Sections 303 and 305): Section 303 requires each state to identify and report to the EPA those waters within its boundaries which do not meet water quality standards based on an assessment of chemical and biological monitoring data. Virginia

submits a "303(d) Total Maximum Daily Load Priority List Report" to the EPA every other year. Neither Broad Run nor Sugarland Run are listed as "impaired waters" in the 1996 report.

Section 305 requires each state to prepare and submit to the EPA a description of water quality, an analysis of the extent to which navigable waters provide for the protection and propagation of aquatic life, an analysis of the extent to which the elimination of the discharge of pollutants have been or will be achieved, and a description of the nature and extent of nonpoint sources of pollutants. Virginia submits a "Virginia Water Quality Assessment and Nonpoint Source Pollution Watershed Assessment Report" to the EPA every other year. Sugarland Run and Broad Run are designated as "high priority" by the Virginia Department of Conservation and Recreation under the *1996 Nonpoint Source Pollution Potential Priorities* guidelines contained in this report.

- NONPOINT SOURCE MANAGEMENT PROGRAM (Section 319): This section requires that each state develop and implement a management program for controlling pollution contributed by nonpoint sources. Virginia's nonpoint source management programs are tailored to meet the requirements of Section 319.

- PERMITS AND LICENSES (Section 401): This section establishes a system for requiring permits for any activity that may result in any discharge into navigable waters, including the fill of wetlands. The Virginia Department of Environmental Quality is the State agency responsible for carrying out most Section 401 permitting requirements.

- NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (Section 402): The U.S. EPA regulates point source and nonpoint source pollution primarily through the National Pollutant Discharge Elimination System (NPDES). The initial thrust of the NPDES program, which was established in 1972, was to reduce point source discharges of pollution from industrial processing plants and municipal wastewater treatment facilities.

  Congress amended the CWA in 1987 to require phased NPDES requirements for municipal stormwater discharges. Under the CWA, an NPDES Municipal Separate Storm Sewer System (MS4) permit will be issued to a subjugated locality on a system-wide basis if:

  (1) the municipality implements enforceable measures to prohibit non-stormwater discharges to the stormsewer; and,
  (2) the municipality demonstrates that it has implemented stormwater management controls to reduce the discharge of pollutants to the maximum extent practicable.

  Phase I of NPDES (which is already being implemented) requires a two-part application process for discharges from systems serving large (500,000 or more people) or medium (100,000 to 500,000 people) municipalities. In general, Part I of the application requires identification of pollutant sources, compilation of existing precipitation and water quality

data, and a field screening analysis for illicit connections and illegal dumping. Part II of the application is the municipality's proposed stormwater management program.

Regulations for smaller urban municipalities (Phase II) with populations under 100,000 are currently being promulgated. Herndon is noted specifically as being subject to NPDES Phase II under 40 CFR Parts 122 and 123. Affected localities will have no more than three years and 90 days from the rule's promulgation to either obtain a Phase II MS4 permit or submit a Notice of Intent (NOI) to comply with the terms of a general permit issued by the State. Additional flexibility is built into the process under a third option where Phase II municipalities can piggyback on larger Phase I permits (such as Fairfax County's). Under this option, both large and small localities must abide by rules of mutual cooperation.

Despite streamlining, all Phase II permit holders are likely to have additional burdens placed on them to more closely account for, and minimize nonpoint source pollution within their borders. At a minimum, Phase II localities opting to comply with a general permit will be required to meet six minimum control measures. Although still in proposed rule format (40 CFR Parts 122 and 123, February 9, 1998), these minimum control measures are likely to include the following.

(1) Public Education and Outreach on Stormwater Impacts. This minimum control will require that the locality take actions to provide materials or develop outreach programs to inform individuals and households about steps that can be taken to reduce stormwater pollution, such as ensuring proper septic system maintenance, limiting the use and runoff of garden chemicals to appropriate amounts, properly disposing of used motor oil or household hazardous wastes, and becoming involved in local stream restoration activities. Other possible outreach materials could encourage citizens to participate in the municipal program by performing such services as roadside litter pickup and stormdrain stenciling, or highlight the potential public health risks to children if exposed to pollution when playing near stormdrains. In addition, some of the materials should be directed towards targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts.

(2) Public Involvement/Participation. The municipal stormwater management program will need to include a public participation component that complies with applicable State and local public notice requirements. The public should participate as a partner in developing, implementing, and reviewing the overall stormwater management program.

(3) Illicit Discharge Detection and Elimination. Discharges from stormwater drainage systems often include wastes and wastewater from non-stormwater sources. Illicit discharges enter the system through either direct connections or indirect connections (infiltration into the stormdrain or spills collected by drain inlets). Any NPDES permit issued to an owner or operator of a regulated small municipal system will, at a minimum, require the development of an illicit

discharge detection and elimination program. The operator will have to show an awareness of the system using maps or other existing documents and will also be required to develop a stormsewer system map showing the location of major pipes, outfalls, and topography. The map should identify areas of concentrated activities likely to be a source of stormwater pollution.

The locality will be required to effectively prohibit illicit discharges into the stormwater sewer system through ordinance, order, or similar means, to the extent allowed under State law, and implement appropriate enforcement procedures and actions as needed. This measure will also require the locality to develop and implement a plan to detect and address illicit discharges including illegal dumping to the system.

Finally, the measure would require the locality to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Actions would include stormdrain stenciling; a program to promote, publicize, and facilitate public reporting of illicit connections or discharges; and, and a program to facilitate distribution of outreach materials. Recycling and other public outreach programs should be developed to address potential sources of illicit discharges, including used motor oil, antifreeze, pesticides, herbicides, and fertilizers.

Activities not regulated include water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration, uncontaminated pump water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, foot drains, lawn watering, individual residential car washing, flows from riparian habitats, dechlorinated pool water, and street wash water.

(4) Construction Site Stormwater Runoff Control. Implementation of this minimum control will require localities to develop, implement, and enforce a pollutant control program to reduce pollutants in stormwater runoff from construction activities that result in land disturbance of one (1) or more acres. The program will also need to ensure control of other waste at construction sites that could adversely impact water quality including discarded building materials, concrete truck wash out, and sanitary waste. The U.S. EPA acknowledges that localities already administer local erosion and sediment control programs; however, they believe that requiring an NPDES permit will strengthen the base level of water quality protection.

(5) Post-Construction Stormwater Management in New Development and Redevelopment. The U.S. EPA rule will require the development, implementation, and enforcement of a program that includes a plan to address stormwater runoff from new development and redevelopment projects to their municipal separate stormsewer system using site appropriate structural and nonstructural BMPs. The program will need to ensure that controls are in place

that would prevent or minimize water quality impacts. The program should ensure adequate long-term operation and maintenance of BMPs. Redevelopment refers to alterations of a property that change the footprint of a site or building in such a way that results in the disturbance of equal to or greater than one (1) acre of land. The U.S. EPA intends to provide guidance on appropriate planning considerations, structural and non-structural controls, and post construction operation and maintenance of BMPs.

The U.S. EPA proposes that municipalities establish requirements for the use of BMPs that minimize water quality impacts and attempt to maintain pre-development runoff conditions. In other words, post-development conditions should not be different from pre-development conditions in a way that adversely affects water quality. The municipal program should include structural and/or nonstructural BMPs. The U.S. EPA encourages locally based watershed planning and the use of preventative measures including nonstructural BMPs which are generally lower in cost than structural BMPs. Examples include policies and ordinances that result in the protection of natural resources and prevention of runoff. These include requirements to limit growth in identified areas, protect sensitive areas such as wetlands and riparian areas, minimize imperviousness, maintain open space, and minimize disturbance of soils and vegetation.

(6) Pollution Prevention/Good Housekeeping for Municipal Operations. Any permit at a minimum will require the operator to develop and implement a cost-effective operation and maintenance/training program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations. This will include: (1) maintenance activities, schedules, and long term inspection procedures for structural and other stormwater controls to reduce floatables and other pollutants discharged from separate storm sewers; (2) controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, and waste transfer systems; (3) procedures for the proper disposal of waste removed from the storm sewer; and, (4) ways to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporation of additional water quality protection devices or practices.

Potential impacts to the Town as a result of Phase II NPDES are discussed under Part II of this report.

- PERMITS FOR DREDGED OR FILL MATERIAL (WETLANDS) (Section 404): Section 404 (in conjunction with Section 10 of the Harbors and Rivers Act) regulates the dredging or fill of navigable waters and is typically used to regulate and protect wetlands. All wetlands are covered by Section 404 due to the "potential" that filling them will impact interstate commerce. However, the 4th Circuit Court, which includes Virginia and Maryland, in *United States v. Wilson*, has recently ruled that the Army Corps of Engineers overstepped the Constitutional bounds of the CWA by regulating fill of isolated wetlands, or wetlands connected to non-navigable waterways. The issue is

currently before the Supreme Court, but its resolution should have relatively little impact on wetland protection in the Town since most of its wetlands are hydrologically connected to the Town's major tributaries.

The U.S. EPA, the U.S. Army Corps of Engineers, and the Virginia Department of Environmental Quality are jointly responsible for enforcing wetland regulations in Virginia. The Town's Zoning Ordinance, Subdivision Ordinance, Site Plan Ordinance, and Chesapeake Bay Preservation Ordinance all require that wetland permits are obtained before development can begin. The U.S. Army Corps of Engineers has established a system of Nation-Wide Permits (NWPs) which allow for expedited review of small wetland/stream channel fill projects. New NWP guidelines became effective February 11, 1997. The most common NWPs, which are described below, are 12, 14, and 26.

NWP 12 allows for discharges associated with excavation, backfill, or bedding for utility lines provided there is no change in preconstruction contours. Excavation activities are included under this NWP and notification is required if any of the following criteria are met:

- mechanized land clearing in a forested wetland;
- a Rivers and Harbors Act §10 permit is required;
- the utility line in waters of the United States exceeds 500 feet; or,
- the utility line is placed within a jurisdictional wetland and it runs parallel to a streambed that is within that jurisdictional wetland.

NWP 14 allows for fill for a road crossing as long as it does not cause a loss of more than one-third acre or is not more than 200 feet in length. The permitee notifies the Corps 30 days prior to the start of construction. NWP 14 cannot be combined with a NWP 26 for the purpose of increasing the footprint of the road crossing.

NWP 26 allows a loss of up to three acres of wetland and 500 linear feet of stream. For fills less than one-third of an acre a developer must submit a report to the Corps within 30 days after completing the work. The report must contain the following information:

- name, address, and phone number of the permitee;
- location of work;
- description of the work; and,
- type and acreage (or square feet) of the loss of waters of the United States. The data collected is used by the Corps to quantify and qualify the types of activities and waters of the United States affected by the use of NWP 26.

For fills greater than one-third acre (and less than 3 acres), a developer must submit a Pre-Construction Notification (PCN) to the Corps 45 days prior to starting work. The following information must be included in the PCN:

- name, address and phone number of the permitee;
- location of the proposed project;
- brief description of the project (project purpose, direct and indirect adverse environmental effects, any other NWPs or other general permits used); and,
- delineation of affected wetlands.

If the proposed fill is more than one acre (and less than 3 acres) the PCN will also be reviewed by the United States Fish and Wildlife Service, the State natural resource or water quality agency (VDEQ), the EPA, the State Historic Preservation Officer, and if necessary, the National Marine Fisheries Service.

Although mitigation is still considered discretionary, the Corps has indicated that most actions involving loss of one-third acre of more will require some level of mitigation. In all instances, discharges must be minimized or avoided to the maximum extent practicable. Although the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) maps depict the general location of wetlands within Herndon, more recent/updated information conducted as part of a 1998 field investigation is contained in the Town's Chesapeake Bay Chapter to the Town's Comprehensive Plan. Regardless, the U.S. Army Corps of Engineer's *Wetlands Delineation Manual* (January, 1987 version) must be used to delineate site specific wetlands for development purposes.

NATIONAL FLOOD INSURANCE ACT AND FLOOD DISASTER PROTECTION ACT

Impacts on Herndon

- Floodplain Ordinance (Current Town)

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 set up a process that requires local governments to adopt floodplain management criteria developed by the Federal Emergency Management Agency in order for residents in flood prone areas to qualify for federal flood insurance. The minimum federal floodplain protection criteria are contained in 44 CFR 60.3. The primary enforcement mechanism for this program is by local ordinance. The only means of enforcement from FEMA is random "Community Assistance" visits that are designed to check or monitor the floodplain ordinance and to assess whether the community is enforcing its ordinance. Assistance on the State level for compliance is administered by the Virginia Department of Conservation and Recreation.

The Community Rating System is an optional element of the National Flood Insurance Program which provides a premium reduction for communities exceeding minimum criteria. FEMA and the Department of Conservation and Recreation provide technical assistance to communities wishing to participate in the CRS.

CHESAPEAKE BAY AGREEMENT

Impacts on Herndon

- Chesapeake Bay Preservation Ordinance (Current Town)
- Shenandoah and Potomac River Basins Tributary Nutrient Reduction Strategy (Voluntary/Cooperative Town)

The 1983 Chesapeake Bay Agreement, fostered through the U.S. EPA, established a cooperative effort among Virginia, Maryland, Pennsylvania, and the District of Columbia to improve water quality in the Chesapeake Bay. The primary pollutants of concern for the Chesapeake Bay are nutrients, which when present in excessive amounts, results in algae blooms and a depletion of life-sustaining dissolved oxygen levels. The most widely known result of this agreement in Virginia is the Chesapeake Bay Preservation Act of 1988 which is implemented in Herndon as the Chesapeake Bay Preservation Ordinance. For a number of reasons, phosphorus was chosen as the keystone pollutant from which the performance criteria of the Act are measured. In 1987, the cooperative agreement was amended to include a goal of reducing the flow of nutrients to the Chesapeake Bay by 40% from a base year of 1985. This initiative, know as Tributary Strategies, focuses on both nitrogen and phosphorus reduction and resulted in the acceptance of the Shenandoah and Potomac River Basins Tributary Nutrient Reduction Strategy by the General Assembly in 1997. The Strategy is unique in that nutrient reduction goals are to be met through a cooperative/voluntary arrangement and paid for under a 50/50 grant matching program established by the Virginia Water Quality Improvement Act of 1997.

A.2 STATE REGULATIONS

The Commonwealth of Virginia has adopted a range of mandates, regulations, and programs aimed at improving water quality and controlling the affects of increased water volume that results from urban development. State requirements and programs covered here include:

- **Virginia Pollutant Discharge Elimination System**
- **Virginia Water Protection Permit**
- **Chesapeake Bay Preservation Act**
- **Tributary Strategies**
- **Stormwater Management Act**
- **Erosion and Sediment Control Law**

VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM

Impacts on Herndon

- Virginia Pollution Discharge Elimination System (VPDES) Phase II Municipal Separate Storm Sewer System (MS4) Permit (Future Town)
- VPDES Industrial Discharge Permits (Current Private Sector)

Section 402 of the federal Clean Water Act, which requires a permit for any discharge to the waters of the United States, is administered in Virginia by the Department of Environmental Quality. DEQ requires a VPDES permit for all point source discharges to surface waters by businesses, governments, or individuals. The U.S. EPA maintains authority to review applications and permits for major dischargers, a distinction based on discharge quantity and content. The CWA amendments of 1987 also require permits for larger municipal stormwater systems (Phase I) and certain industrial stormwater discharges. DEQ also regulates these stormwater discharges through VPDES permits.

Once NPDES Phase II MS4 permit requirements are finalized by the U.S. EPA, it is very likely that the Department of Environmental Quality will be responsible for reviewing, granting, and enforcing these permits, including Herndon's.

VIRGINIA WATER PROTECTION PERMIT

Impacts on Herndon

- Wetlands Protection under Virginia Department of Environmental Quality Water Protection Permit (Current Development Community)

If a project requires a federal permit for discharges of dredged material into waterways or wetlands, or for other instream activities, the Department of Environmental Quality will review the project for issuance of a Virginia Water Protection (VWP) permit, formerly called 401 certification.

CHESAPEAKE BAY PRESERVATION ACT

Impacts on Herndon

- Chesapeake Bay Preservation Ordinance (Current Town)
- Chesapeake Bay Preservation Chapter to the Town of Herndon Comprehensive Plan (Current Town)
- Chesapeake Bay Preservation Program Reporting (Future Town)

The Chesapeake Bay Preservation Act, and its resultant Chesapeake Bay Preservation Area Designation and Management Regulations, specifically addresses nonpoint source pollution contributed to the Chesapeake Bay from the Tidewater portion of its Virginia watershed. The Act is administered through the Chesapeake Bay Local Assistance Department and is implemented through 84 affected local governments. Localities implement and enforce the program through their land use management tools including comprehensive plans, zoning ordinances, and subdivision ordinances.

The Chesapeake Bay Local Assistance Department (CBLAD) has approached Bay Act implementation in three phases. Phase I is program development and ordinance adoption. Phase II is the incorporation of water quality into local comprehensive plans. Phase III involves (1) reconciliation of all local ordinances involving water quality and (2) establishing a system of State oversight over local program implementation.

- PHASE I (PROGRAM DEVELOPMENT AND ORDINANCE ADOPTION): The Regulations specify eleven performance criteria that apply to proposed land use activities within sensitive lands designated by local governments as Chesapeake Bay Preservation Areas. Performance criteria applied to these areas ensure that the Chesapeake Bay and local water resources are not adversely affected by activities on the land. The locally designated CBPA consists of two components: the Resource Protection Area (RPA) and the Resource Management Area (RMA).

RPAs are lands at or near water courses/shorelines that have intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts that may cause significant degradation to the quality of State waters. At a minimum, RPAs include:

- tidal shores;
- tidal wetlands;
- nontidal wetlands contiguous to tidal wetlands and tributary streams; and,
- a 100-foot buffer landward of these features and along tributary streams.

In addition, local governments may include other lands that are deemed to be significant in the protection of State waters. Development in the RPA is limited to water dependant facilities or the redevelopment of existing facilities, provided these activities adhere to the performance criteria specified in the Regulations.

RMAs are land types that, if improperly used or developed, have a potential for causing significant water quality degradation or diminishing the functional value of the RPA. The RMA must encompass a land area large enough to provide significant water quality protection. The following categories must be considered by the locality for inclusion in the RMA:

- floodplains;
- highly erodible soils, including steep slopes;
- highly permeable soils;
- nontidal wetlands not included in the RPA; and,
- other lands necessary to protect the quality of State waters.

The "General Performance Criteria" that apply to all land within CBPAs include the following.

(1) No more land shall be disturbed than is necessary to provide for the desired use or development.

(2) Indigenous vegetation shall be preserved to the maximum extent possible consistent with the use and development allowed.

(3) Where the best management practices utilized require regular or period maintenance in order to continue their functions, such maintenance shall be ensured by the local government through a maintenance agreement with the owner or developer or some other mechanism that achieves an equal objective.

(4) All development exceeding 2,500 square feet of land disturbance shall be accomplished through a plan of development review process consistent with §15.1-491(h) of the Code of Virginia.

(5) Land development shall minimize impervious cover consistent with the use or development allowed.

(6) Any land disturbing activity that exceeds an area of 2,500 square feet (including construction of all single family houses, septic tank drainfields, etc.) shall comply with the requirements of the local erosion and sediment control ordinance.

(7) Onsite sewage treatment systems not requiring a VPDES permit shall:

(a) have pump-out accomplished for all such systems at least once every five years; and,

(b) for new construction, provide a reserve sewage disposal site with a capacity at least equal to that of the primary sewage disposal site.

(8) For new development, the post-development nonpoint source pollution runoff load shall not exceed the predevelopment load based upon average land cover conditions. Redevelopment of any site not currently served by water quality best management practices shall achieve at least a 10% reduction of nonpoint source pollution in runoff compared to the existing runoff load from the site. Post-development runoff from any site to be redeveloped that is currently served by water quality best management practices shall not exceed the existing load of nonpoint source pollution in surface runoff.

(9)(10) [Requirements relating to agricultural activities and silvicultural activities, respectively.]

(11) Local governments shall require evidence of all wetlands permits required by law prior to authorizing grading or other non-site activities to begin.

In addition to these general criteria are specific performance criteria for application in Resource Protection Areas.

(1) A "Water Quality Impact Assessment" is required for any proposed development in a Resource Protection Area.

(2) To minimize the adverse effects of human activities on the other components of the Resource Protection Area, State waters, and aquatic live, a 100-foot "buffer area" of vegetation that is effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff must be retained if present and established where it does not exist. Sections §4.3.B.1,2,3, and 4 provide information on buffer modification requirements.

The Regulations also provide for administrative waivers and exemptions in §4.5.

- PHASE II (COMPREHENSIVE PLANS): The Regulations state that local governments shall review and revise their comprehensive plans to incorporate water quality considerations. Requirements include:

(1) Local governments should establish an information base from which to make policy choices about future land use and development that will protect the quality of State waters. This element of the plan should be based on the following:

- information used to designate Chesapeake Bay Preservation Areas;
- other marine resources;
- shoreline erosion problems and location of erosion control structures;
- conflicts between existing and proposed land uses and water quality protection; and,
- a map or map series accurately representing the above information.

(2) As part of the plan, local governments should clearly indicate local policy on land use issues relative to water quality protection. Local governments should ensure consistency among the policies developed.

- Local governments should discuss each component of Chesapeake Bay Preservation Areas in relation to the types of land uses considered appropriate and consistent with the goals and objectives of the Act, these regulations and their local programs.

- At a minimum, local governments should prepare policy statements for inclusion in the plan on the following issues:
  - physical constrains to development, including soil limitations, with an explicit discussion of soil suitability for septic tank use;
  - protection of potable water supply, including groundwater resources;
  - relationship of land use to commercial and recreational fisheries;
  - appropriate density for docks and piers;
  - public and private access to waterfront areas and effect on water quality;
  - existing pollution sources; and,
  - potential water quality improvement through the redevelopment of Intensely Developed Areas.
- For each of the policy issues listed above, the plan should contain a discussion of the scope and importance of the issue, alternative policies considered, the policy adopted by the local government for that issue, and a description of how the local policy will be implemented.
- Within the policy discussion, local governments should address consistency between the plan and all adopted land use, public services, land use value taxation ordinances and policies, and capital improvement plans and budgets.

Local government comprehensive plans are reviewed and certified by the Chesapeake Bay Local Assistance Board.

- PHASE III (RECONCILIATION AND ENFORCEMENT): The Regulations require that affected Tidewater localities review and revise their zoning ordinances, plans of development review, and subdivision ordinances to ensure that the are mutually supportive of, and comply with the Act.

  In addition, it has long been the intention of the Chesapeake Bay Local Assistance Department to establish a system of local government reporting on ordinance enforcement. In this manner, CBLAD can ensure a level playing field in ordinance implementation. CBLAD will solicit input from local governments on how to ensure enforcement while minimizing administrative burdens on local government staff.

The Chesapeake Bay Preservation Area Designation and Management Regulations are currently undergoing review and it is likely that changes will be made. Discussions with CBLAD staff has

indicated that any changes affecting Herndon should be minor and may require very slight administrative amendments.

More significantly, the General Assembly, in 1998, amended the Act itself to specifically allow localities to incorporate provisions for civil penalties into local ordinances for violations in Chesapeake Bay Preservation Areas. This new power, which allows for a penalty of $1,000 per day per penalty up to $10,000, is contained in §10.1-2109.E of the Code of Virginia.

VIRGINIA TRIBUTARY STRATEGIES
VIRGINIA WATER QUALITY IMPROVEMENT ACT

Impacts on Herndon

- Indirectly through Blue Plains WWTF Rates
- Voluntary Nonpoint Source Pollution Stormwater Retrofit (Voluntary Town)

By 1987, it had become apparent that in order to protect the health of the Chesapeake Bay, it would be necessary to further reduce the flow of nutrients and other harmful pollutants entering the Bay (previous efforts were focused on a no-net-increase approach). As a result, the Chesapeake Bay Agreement was amended in that year to include a goal of reducing the flow of controllable nutrients (phosphorus and nitrogen) to the Bay by 40% by the year 2000.

The idea behind Tributary Strategies is to address water quality problems on a watershed-wide basis as opposed to individual development sites or even jurisdictions. While individual jurisdictions are expected to play a major role in its implementation, the purpose of Tributary Strategies is to recognize that the protection of water resources requires a comprehensive and flexible approach. Under the program, each tributary to the Chesapeake Bay must arrive at a Tributary Strategy which documents and gives credit to existing programs, and determines where new programs may be implemented most cost effectively. On the State level, coordination of Tributary Strategies is a cooperative effort among the Department of Conservation and Recreation, the Department of Environmental Quality, and the Chesapeake Bay Local Assistance Department. The DCR is the lead agency in the State regarding nonpoint source pollution while the DEQ is the lead agency regarding point source pollution control.

While they overlap, Tributary Strategies covers a more extensive geographic area than the existing Chesapeake Bay Preservation Act boundaries (the entire Chesapeake Bay basin of Virginia, or almost two thirds of the State, versus Tidewater). It should be recognized that local Chesapeake Bay ordinances deal primarily with new development, and therefore do not count towards the 40% reduction goal. Local ordinances are intended to avoid future increases in nutrients to the Bay as a result of new development. Only in the case of redevelopment is there any reduction in nutrients (10%) to the Bay.

The State's Tributary Strategies include identification of new activities, management measures, and increased use of BMPs to achieve the 40% nutrient load reduction. Urban retrofit may be accomplished either structurally (through the establishment of regional BMPs or by modifying existing flood control facilities) or nonstructurally (through the implementation of source control programs such as public education, or through the implementation of vegetative BMPs).

In 1997, and after much negotiation, the General Assembly accepted the *Shenandoah and Potomac River Basins Tributary Nutrient Reduction Strategy*. In general, the Northern Virginia strategy calls for achieving nutrient reduction through:

- increased use and coverage of nonpoint source BMPs (through retrofit of existing land uses) for both agricultural and urban lands; and,
- retrofit of all wastewater treatment plants in the region, with a design capacity of 0.5 million gallons per day or greater, with year around biological nutrient removal (BNR) or equivalent technology.

Nearly 90% of the cost of achieving Northern Virginia's nutrient reduction goals comes from proposed retrofit of regional wastewater treatment facilities. The Virginia Association of Municipal Wastewater Agencies (VAMWA) has produced a position paper on how to meet those goals and is generally accepted as the primary implementation mechanism. The primary funding mechanism for Tributary Strategies is the Virginia Water Quality Improvement Fund created by the Virginia Water Quality Improvement Act of 1997. This fund will pay for up to 50% of the cost of nutrient reduction projects on a competitive basis.

While Herndon is not mandated to achieve any specific nutrient reductions since it does not own or operate a wastewater treatment facility, it may contribute voluntarily through participation in the Water Quality Improvement Fund grant program.

STORMWATER MANAGEMENT ACT

Impacts on Herndon

- Optional Adoption of Stormwater Management Ordinance

In 1989, the General Assembly adopted the Stormwater Management Act (§10.1-603.1 *et seq* of the Code of Virginia) enabling the establishment of comprehensive stormwater management programs. The Department of Conservation and Recreation promulgated the Virginia Stormwater Management Regulations in 1990, which were substantially amended in 1998 as 4VAC3-20 *et seq*. The State stormwater management program addresses the permanent changes in stormwater runoff that occur as a result of land development. The Regulations specify minimum technical and administrative requirements for local programs and State agency projects.

Local adoption of a stormwater management program is optional. However, localities choosing to adopt a stormwater management program *must* comply with the general technical criteria outlined in 4VAC3-20-60 and the technical provisions for flooding contained in 4VAC3-20-85. Technical provisions relating to stormwater runoff quality (4VAC3-20-71), stream channel erosion (4VAC3-20-81), and watershed or regional stormwater management plans (4VAC3-20-101) may be adopted at the option of the locality. Stormwater management programs that contain these optional provisions must comply with the guidelines contained in the Regulations.

Localities also have the option of adopting more stringent requirements than those outlined in the Regulations.

- GENERAL TECHNICAL CRITERIA: General technical criteria which *must* be included in a local program include the following.
  - A. Determination of flooding and channel erosion impacts to receiving streams due to land development projects shall be measured at each point of discharge from the development project and such determination shall include any runoff from the balance of the watershed which also contributes to that point of discharge.
  - B. The specified design storms shall be defined as either a 24-hour storm using the rainfall distribution recommended by the U.S. Soil Conservation Serve when using SCS methods, or as the storm of critical duration that produces the greatest required storage volume at the site when using a design method such as the Modified Rational Method.
  - C. All pervious lands in the site shall be assumed prior to development to be in good condition, with good cover, or with conservation treatment regardless of conditions existing at the time of computation.
  - D. Construction of stormwater management facilities or modifications to channels shall comply with all applicable laws and regulations.
  - E. Impounding structures that are not covered by the Impounding Structure Regulations shall be engineered for structural integrity during the 100-year storm event.
  - F. Pre-development and post-development runoff rates shall be verified by calculations that are consistent with good engineering practices.
  - G. Outflows from a stormwater management facility shall be discharged to an adequate channel, and velocity dissipaters shall be placed at the outfall of all stormwater management facilities and along the length of any outfall channel as necessary to provide a nonerosive velocity of flow from the basin to a channel.
  - H. Proposed residential, commercial, or subdivisions shall apply these stormwater management criteria to the land development as a whole. Individual lots in new subdivisions shall not be considered separate land development projects, but rather the entire subdivision shall be considered a single land development project. Hydrologic parameters shall reflect the ultimate land development and shall be used in all engineering calculations.
  - I. All stormwater management facilities shall have a maintenance plan which identifies the owner and the responsible party for carrying out the maintenance plan.
  - J. Construction of stormwater management impoundment structures within a Federal Emergency Management Agency designated 100-year floodplain shall be avoided to the extent possible.
  - K. Natural channel characteristics shall be preserved to the maximum extent practicable.
  - L. Land development projects shall comply with the Virginia Erosion and Sediment Control Law and attendant regulations.

- FLOODING CRITERIA: Flooding technical criteria that must be included in a local program include the following.
  - A. Downstream properties and waterways shall be protected from damages from localized flooding due to increases in volume, velocity and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this section.
  - B. The 10-year post-developed peak rate of runoff from the development site shall not exceed the 10-year pre-developed peak rate of runoff.
  - C. In lieu of subsection B of this section, localities may, by ordinance, adopt alternative design criteria based upon geographic, land use, topographic, and geological factors, or other downstream conveyance factors as appropriate.
  - D. Linear development projects shall not be required to control post-developed stormwater runoff for flooding, except in accordance with a watershed or regional stormwater management plan.

- STREAM CHANNEL EROSION CRITERIA: Stream channel erosion technical criteria, that may be included in a local program, include the following.
  - A. Properties and receiving waterways downstream of any land development project shall be protected from erosion and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this section.
  - B. The plan approving authority shall require compliance with subdivision 19 of 4VAC50-30-40 of the Erosion and Sediment Control Regulation.
  - C. The plan approving authority may determine that some watersheds or receiving stream systems require enhanced criteria in order to address the increased frequency of bankfull flow conditions brought on by land development projects. Therefore, in lieu of the reduction of the 2-year post-developed peak rate of runoff as required in subsection B of this section, the land development project being considered shall provide 24-hour extended detention of the runoff generated by the 1-year, 24 hour duration storm.
  - D. In addition to subsections B and C of this section, localities may, by ordinance, adopt more stringent channel analysis criteria or design standards to ensure that the natural level of channel erosion, to the maximum extent practicable, will not increase due to land development projects. These criteria may include, but are not limited to, the following:
    1. Criteria and procedures for channel analysis and classification.
    2. Procedures for channel data collection.
    3. Criteria and procedures for the determination of the magnitude and frequency of natural sediment transport loads.
    4. Criteria for the selection of proposed natural or man-made channel linings.

- WATER QUALITY CRITERIA: Water quality technical criteria that may be included in a local program include the following.
  - A. Compliance with the water quality criteria may be achieved by applying the performance-based criteria or the technology-based criteria to either the site or a planning area.

Performance-based criteria are those that are currently used under the provisions of the Chesapeake Bay Preservation Area Designation and Management Regulations. Technology-based criteria provide for the water quality criteria to be met if a particular technique is used and maintained under specific development (imperviousness) conditions.

- REGIONAL STORMWATER MANAGEMENT PLANS: This section enables localities to develop regional stormwater management plans. The objective of a regional stormwater management plan is to address stormwater management concerns in a given watershed with greater economy and efficiency by installing regional stormwater management facilities versus individual, site–specific facilities. If developed, a regional plan shall, at a minimum, address the following.
  - A. The specific stormwater management issues within the targeted watersheds.
  - B. The technical criteria in 4VAC3-20-50 through 4VAC3-20-85 as needed based on subdivision A. of this section.
  - C. The implications of any local comprehensive plans, zoning requirements, and other planning documents.
  - D. Opportunities for financing a watershed plan through cost sharing with neighboring agencies or localities, implementation of regional stormwater utility fees, etc.
  - E. Maintenance of selected stormwater management facilities.
  - F. Future expansion of the selected stormwater management facilities in the event that development exceeds the anticipated level.

EROSION AND SEDIMENT CONTROL LAW

Impacts on Herndon

- Erosion and Sediment Control Ordinance (Current Town)

The Erosion and Sediment Control Law of 1988 deals primarily with the control of erosion and sediment during the development process. The Virginia Erosion and Sediment Control Law is codified as Title 10, Chapter 5, Article 4 of the Code of Virginia. Section 10.1-562 addresses local erosion and sediment control program requirements that are to be consistent throughout the Commonwealth. The regulatory program is implemented State-wide through 171 local erosion and sediment control ordinances and the Department of Conservation and Recreation. Minimum criteria, standards, and guidelines are established in the Virginia Erosion and Sediment Control Handbook. The regulations are applicable to land development projects disturbing 10,000 square feet or more, except in locally designated Chesapeake Bay Preservation Areas, where the Regulations are applicable at 2,500 square feet of disturbance. Local governments not subject to the Chesapeake Bay Preservation Act may voluntarily reduce the land disturbance threshold at which the Regulations apply.

As part of each local program, any person engaging in land-disturbing activities must submit an erosion and sediment control plan prior to undertaking these activities. The local authority must

provide periodic inspections of the activity and may require monitoring and reports from responsible persons. General criteria for controlling erosion and sediment under this legislation includes measures for the stabilization of soil stockpiles and graded areas, as well as requirements for the establishment of permanent vegetation and for the installation of sediment traps, basins, diversion, and terraces. The general criteria also include stormwater management criteria for controlling off-site erosion.

APPENDIX B
COSTS AND CONTACTS

The following is a more detailed account of the various costs associated with Matrix of Recommendations for Action.

B.1 SANITARY AND STORMSEWER LINE GIS

In October, 1997, the Northern Virginia Planning District Commission, (now the Northern Virginia), was awarded $5,863 by the Chesapeake Bay Local Assistance Department to develop water and sanitary sewer layers for the Town of Vienna, Virginia. Staff time included 48 hours of a program manager and 220 hours of a GIS technician.

The methodology used by the NVPDC will enable the implementation of future network and routing modeling by Herndon's staff. The actual cost of developing sanitary sewer and stormsewer lines for the Town of Herndon will largely depend upon the quality of the existing mapped information.

B.2 STORMDRAIN LABELING PROGRAM

The Department of Community Development has investigated the cost of retrofitting 1,293 of the Town's 1,293 drainage structures with *das* Manufacturing Inc. non-reflective, duracast stormsewer markers.

Price/marker		Non-reflective	Reflective
(minimum 1,000)	Standard:	$1.60	$2.90
	Duracast:	$4.80	$6.10

*The more purchased, the cheaper the cost. If other jurisdictions agree on the same size and color, more could be bought at a cheaper price. The wording can be different without affecting price.

Cost of adhesive: 10 oz. Caulk tube – $7.80/tube (12 tubes/case)
$93.60/case

Approximate cost for all 1,293 drainage structures using non-reflective duracast:

Markers:	$6,206.40
Adhesive (4 cases):	$374.40
Total:	$6,580.80

In addition to labeling materials, there is a cost for printing educational materials to be distributed prior to actual labeling. This is necessary to provide a heads-up to residents about what is going on and why, and what they can do to help improve water quality on their own. The *Nonstructural Urban BMP Handbook* (NVPDC, 1996) contains examples of pre-labeling

education materials. In addition, the Northern Virginia Soil and Water Conservation District has also produced educational materials relating to stormdrain labeling programs.

Cost of printing:	5,786 households 8.5 x 14 colored paper Automated folding One color ink	
	Total:	$496.00

B.3 HOUSEHOLD HAZARDOUS MATERIALS PROGRAM AND USED OIL/ANTIFREEZE RECYCLING PROGRAM

According to staff of the Fairfax County Household Hazardous Waste Program, there is no cost to the Town for disposal of collected materials at the County's I-66 Transfer Station on West Ox Road in Fairfax. However, the County discourages frequent hazardous waste collections by localities or organizations for the following reasons.

- The Transfer Station operates from Wednesday to Saturday. Since most pick-ups occur on Saturdays, it is often necessary for an organization to store the hazardous materials for three to four days.
- Large quantities of hazardous waste entering the Transfer Station all at once can overwhelm County staff if proper coordination is not performed.
- The amount of hazardous waste collected during these programs can be rather large.

Rather, the County encourages wide-spread advertising of its drop-off center. The cost of running special pick-ups is also expensive. The cost of a one-day Household Hazardous Waste pilot collection event at the Mount Vernon Government Center in Fairfax County was approximately $13,651 in 1995. A total of 183 customers participated and approximately 6,500 pounds of waste and 175 gallons of used motor oil were collected. The cost break-down for the event was as follows (with no cost for used motor oil disposal since it was recycled at no cost).

• Disposal Cost for Waste Material	$4,803
• Supplies	$825
• Staff Costs (DPW)	$3,846
• Staff Costs (Fire Dept.)	$2,734
• Misc. Costs (Adv., Printing, Trans.)	$1,443
TOTAL	$13,651

The program cost per pound of waste was $2.10 and the cost per customer was approximately $75. While the one-day event was considered successful, it cost the County almost twice as much per customer than collection at its permanent facility ($40). The Town, as an alternative to establishing its own program, may wish to hold a one-time drop-off day and use that opportunity to advertise and increase awareness of the County's program. The Town must contact the County at 803-9614 well prior to any drop-off program to make appropriate arrangements.

The cost of establishing a permanent used oil and antifreeze collection center is considerably more reasonable. According to research conducted by the Northern Virginia Regional Commission in 1999, a used oil and antifreeze collection center can be established for roughly $3,000 to $5,000 in infrastructure costs. Pick-up for used oil and antifreeze is in the realm of $0.25 per gallon. However, pick-up may be less or free depending on market conditions and volume collected.

APPENDIX C
COMPREHENSIVE PLAN IMPLEMENTATION TABLE

The following table presents information on the degree to which the recommendations presented in Part V address the action statements of the Chesapeake Bay Preservation Chapter to the Herndon Comprehensive Plan (outlined on page I.2). The degree addressed is defined in the following manner:

Fully addressed:	The recommendations of this report will fully implement the Town's Comprehensive Plan.
Partially addressed:	The recommendations of this report will serve to implement the Town's Comprehensive Plan. However, additional work/programs will be required to fully implement the intent of the Comprehensive Plan.
Future date:	This element of the Town's Comprehensive Plan will be fully or partially implemented under a future work element of NVPDC Contract #98-2.
Not addressed:	This element of the Town's Comprehensive Plan is outside of the scope of work of NVPDC Contract #98-2 or the work components of a typical stormwater management plan.

Comprehensive Plan Action		Degree Addressed by Part V Recommendations for Action
(1)	Strengthen the requirements to qualify for the Town's CBPO [Chesapeake Bay Preservation Ordinance] opt-out provisions or eliminate the opt-out provision altogether to require the use of stormwater quality BMPs for all development.	Recommend elimination of opt-out provision. Fully addressed.
(2)	Plan and implement cooperative/regional stormwater management controls, where appropriate, to improve overall water quality management and decrease the overall maintenance burden.	Update Town Pro Rata Share Program. Partially addressed.
(3)	Perform a review of the Town's Zoning and Subdivision ordinances to identify opportunities for reducing impervious surface space requirements during the site plan development and review process.	Submit Subdivision Ordinance to Chesapeake Bay Local Assistance Department for review. Partially addressed.

Comprehensive Plan Action		Degree Addressed by Part V Recommendations for Action
(4)	Amend the Town's Zoning Ordinance to include site design guidelines that encourage clustering in order to preserve sensitive soil areas as permanent open space.	Not addressed.
(5)	Adopt and implement a Stormwater Management Ordinance that will comprehensively regulate stormwater volume in addition to stormwater quality.	Recommend adoption of Stormwater Management Ordinance. Funding source identified. Fully addressed.
(6)	Update FEMA floodplain maps to reflect the new development, loss of wetlands, and fill occurring in and around the Town.	Recommend submission of map and LOMRs with explanation of changes in the Town to FEMA. Fully addressed.
(7)	Establish a Town Household Hazardous Materials Drop-Off and Collection Program for homeowners, to operate at specific times, such as during Fall and Spring clean ups. The Town would arrange for transfer to Fairfax County facility, perhaps with special volunteer assistance.	Recommend one-time drop-off day and distribution of materials to highlight the availability of Fairfax County's ongoing program. If change in recommendation is accepted, this element is fully addressed.
(8)	Work closely with the Northern Virginia Soil and Water Conservation District to implement a strategic nonpoint source pollution program for the Town that will prevent pollution at its sources.	Implement a stormdrain labeling program and pre-labeling public education program. Partially addressed.
(9)	Implement a public education campaign aimed at enforcing and strengthening the Town's animal waste control laws.	Develop a public education brochure on the Town's dog waste disposal regulations. Fully addressed.
(10)	Develop a database of households with above ground storage tanks and implement an education program aimed at preventing accidental discharges.	Not addressed.
(11)	Implement a water conservation education program using water billing statements as a distribution vehicle. Use the City of Fairfax's program as a model.	Not addressed.

Comprehensive Plan Action		Degree Addressed by Part V Recommendations for Action
(12)	Implement a systematic, Town-wide program to update environmental and water quality baseline data to ensure that incorrect or outdated information is not carried forward into future planning and assessment efforts.	Update FEMA floodplain maps. Continue with proactive mapping of non-tidal/isolated wetlands. Partially addressed.
(13)	Expand the Town's water quality monitoring efforts through the use of local volunteers and environmental grounds or by contracting with the Fairfax County Health Department.	Not addressed. Can be addressed in this report if Town desires.
(14)	Map mature forest areas and groves within the Town in order to better utilize the Town's Urban Forestry and Landscaping Ordinance and to provide the Town with a better picture of how reforestation and protection can better link existing resources.	Not addressed.
(15)	Develop and implement a Town-wide watershed restoration and protection plan in order to improve water quality and wildlife habitat. Use water quality monitoring data in order to pinpoint potential sources of pollution and a stream reach assessment, including an inventory of denuded stream reaches, as the basis of the plan. To the extent practicable, incorporate these restoration and planning principles into the Town's Stormwater Management Plan currently under development.	Will be partially addressed at a future date.
(16)	Help coordinate or provide proper maintenance to the newly reforested section of Sugarland Run from Dulles Toll Road to the W&OD Trail.	Not addressed.
(17)	Devise and incorporate detention capabilities into denuded sections of Sugarland Run between Dulles Toll Road and the W&OD Trail.	Not addressed.